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SUPREME COURT OF THE UNITED STATES. OCTOBER TERM, 1921.

No. 219.

THE CITY OF HOUSTON, APPELLANT,

VB.

SOUTHWESTERN BELL TELEPHONE COMPANY.

No. 220.

SOUTHWESTERN BELL TELEPHONE COMPANY, APPELLANT,

¥8.

THE CITY OF HOUSTON ET AL.

APPEALS FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF TEXAS.

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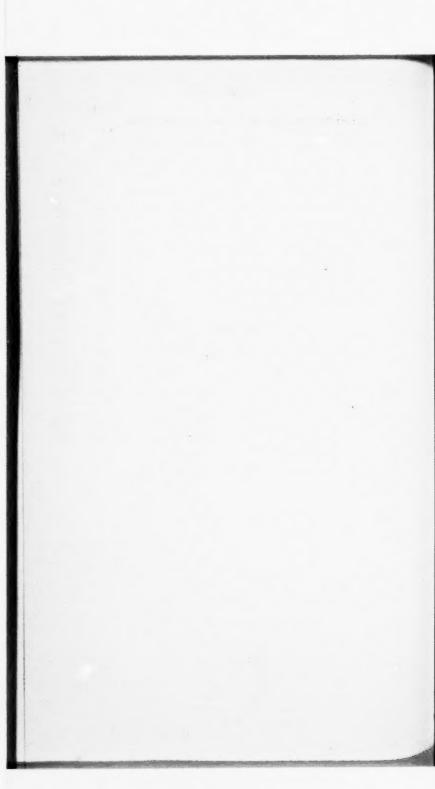
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No. 108. Equity.

SOUTHWESTERN BELL TELEPHONE COMPANY

versus

THE CITY OF HOUSTON et al.

TRANSCRIPT OF RECORD ON APPEAL FROM UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF TEXAS, HOUSTON DIVISION.

VOLUME I.

In the Supreme Court of the United States.

No. --

No. 108. In Equity.

SOUTHWESTERN BELL TELEPHONE COMPANY, Plaintiff (Substituted by Order of Court as Party Complainant in the Place of The Southwestern Telegraph and Telephone Company),

versus

THE CITY OF HOUSTON et al., Defendants.

Appeal from the District Court of the United States for the Southern District of Texas.

Caption.

No. 108. In Equity.

United States District Court, Southern District of Texas, Holding Sessions at Houston.

SOUTHWESTERN BELL TELEPHONE COMPANY, Plaintiff (Substituted by Order of Court as Party Complainant in the Place of The Southwestern Telegraph and Telephone Company),

V8.

THE CITY OF HOUSTON et al., Defendants.

Be it remembered that in the above entitled and numbered cause lately pending in said court at Houston, and in which a Final Decree was rendered at the Regular February, 1920, Term of said Court then in session in the Court-room of said Court in the City of Houston, on the 18th day of September, A. D. 1920.

1

Honorable George Whitfield Jack, Acting United States District Judge for the Southern District of Texas, presiding, the following proceedings were had and taken in said Court, to-wit:

2

Præcipe for Transcript.

Filed Nov. 23, 1920.

Equity. No. 108.

In the District Court of the United States for the Southern District of Texas at Houston.

SOUTHWESTERN TELEGRAPH & TELEPHONE Co., Complainant,

VS.

THE CITY OF HOUSTON et al., Defendants.

To the Clerk of said Court:

The Clerk will please incorporate into the transcript of the record on appeal the following portions of the record:

- No. 1. The Plaintiff's amended and substitute- Bill of Complaint, filed December 1919.
 - No. 2. The answer of the Defendants.
- No. 3. The order referring the cause to the Special Master to take the testimony and report to the Court.
 - No. 4. The report of the Special Master.
- No. 5. The exceptions of the Defendants to the report of the Special Master.
- No. 6. The Opinion of the Court upon the hearing of such exceptions, filed herein the 7th day of September 1920.
- No. 7. The judgment and decree of the court entered herein on the 18th day of September 1920.
 - No. 8. The Petition of the City of Houston for an appeal.
 - No. 9. The Assignments of Error filed with said Petition for appeal.
 - No. 10. The order of the Court granting the Petition for Appeal.
 - No. 11. The Citation on Appeal and the return thereon.
- No. 12. That portion of the testimony taken before the Master, which has been transcribed and filed in the office of the Clerk of this Court on the 19th day of November 1920.

W. J. HOWARD, Solicitor and Counsel for the Defendant, the City of Houston. Service hereof accepted this 22nd day of November, 1920.

JOSEPH D. FRANK,

Solicitor for Plaintiff.

Endorsements: Equity No. 108. In the District Court of the United States for the Southern District of Texas at Houston. The Southwestern Telegraph & Telephone Company, Complainant, vs. The City of Houston et al., Defendants. Præcipe for transcript. Filed 23 day of Nov., 1920. L. C. Masterson, clerk, by J. L. Sexton, deputy.

3 Amended and Substituted Bill of Complaint.

Filed Dec. 15, 1919, Nunc pro Tunc as of Dec. 12, 1919.

In the District Court of the United States for the Southern District of Texas, Houston Division.

No. 108. In Equity.

THE SOUTHWESTERN TELEGRAPH AND TELEPHONE COMPANY, a Corporation,

VS.

The City of Houston, Texas; A. E. Amerman, as Mayor of the City of Houston; Dan M. Moody, as Tax and Land Commissioner of the City of Houston; H. A. Halverton, as Fire Commissioner of the City of Houston; Matthew Drennan, as Street and Bridge Commissioner of the City of Houston; David Fitzgerald, as Water Commissioner of the City of Houston; Searcy Baker, as Superintendent of Police of the City of Houston.

Amended and Substituted Bill of Complaint.

Now comes the Plaintiff, leave of Court being obtained so to do, and files this its Amended and Substituted Bill of Complaint and complaining of the defendants says:

- 1. Plaintiff, The Southwestern Telegraph and Telephone Company, is now and at all times hereinafter mentioned was a corporation duly organized and existing under the laws of the State of New York and a citizen of said State, and duly authorized under the laws of the State of Texas to do business within the State of Texas.
- 2. Said defendants and each of them, are now and at all times herein mentioned were citizens, residents and inhabitants of the State of Texas, and of the Southern District of Texas, Houston Division.
- 3. The defendant, the City of Houston, is now and at all of the times hereinafter mentioned was a municipal corporation of the State of Texas, organized and existing by virtue of a special charter granted to it by the State of Texas.

- 4. The defendant A. E. Amerman, is now and has been for a period of approximately two years, the duly elected, qualified and acting Mayor of the City of Houston.
- The defendant, Dan M. Moody, is now and has been for some time the duly elected, qualified and acting Commissioner of Taxes and Land for the City of Houston.
- 6. The defendant H. A. Halverton, is now and has been for some time the duly elected, qualified and acting Fire Commissioner for the City of Houston.
- 7. The defendant Matthew Drennan, is now and has been for some time the duly elected, qualified and acting Street and Bridge Commissioner of the City of Houston.
- 8. The defendant David Fitzgerald, is now and has been for some time the duly elected qualified and acting Water Commissioner of the City of Houston.
- 9. The defendant, Searcy Baker, is now and has been for some time the duly appointed, qualified and acting Superintendent of Police of the City of Houston.
- 10. The said A. E. Amerman, Dan M. Moody, H. A. Halverton, Matthew Drennan and David Fitzgerald in the several capacities aforesaid, now constitute the City Council of the City of Houston, and constitute the governing body of said City.
- 11. The full names of the several defendants whose full names are not stated are unknown to the Plaintiff.
- 12. This action is of a civil nature and the matter in controversy herein exceeds the sum or value of to wit: Three Thousand Dollars (\$3,000.00) as will more fully appear hereinafter, and arises under the constitution and laws of the United States, and is a suit in equity wholly between citizens of different states.
- 13. Plaintiff now and during the time herein referred to has been lawfully engaged in the telephone business and at and during said times has lawfully owned and operated a telephone exchange system in the City of Houston, with all of the property, appliances and appurtenances necessary to the proper operation of said exchange system.
- 14. On or about the 22nd day of October 1909, the City of Houston purporting to act under authority conferred upon it by a special act of the twenty-ninth Legislature of the State of Texas in the year 1905, the same being a special charter granted to said City, passed an ordinance which is now Section 990 of the Revised Code of Ordinances of the City of Houston, fixing the rates to be charged by any person, firm, corporation or receiver, operation or owning telephone lines in the City of Houston, engaged in the business of furnishing telephone connections and service to the citizens thereof. Said ordinance contained among other things the following provisions:

"Sec. 990. Rates of Charges: Any person, firm, corporation or receiver operating or owning telephone lines and exchanges within the City of Houston, Harris County Texas, engaged in the business of furnishing telephone connection and service to the citizens of the City of Houston, shall charge not exceeding the following rates, towit:

Rate One: Telephone lines and exchanges having three thousand (3,000) or less paying subscribers within the limits of the City of Houston shall have the right to charge for business or office connection, Three Dollars (\$3.00) per month, for residence Two Dollars (\$2.00) per month. Party Lines: Business or office, Two Dollars (\$2.00) per month;

Residence, One Dollar (\$1.00) per month.

Rate Two: Telephone lines and exchanges having in excess of Three thousand (3,000) paying subscribers within the limits of the City of Houston shall have the right to charge for business or office connections, Five Dollars (\$5.00) per month, for residence Two Dollars (\$2.00) per month.

Party Lines: Business or office Three Dollars (\$3.00) per month,

Residence One and 50/100 Dollars (\$1.50) per month.

Provided, that the rates above fixed, are fixed for a reasonably efficient service, and in the event the service is not reasonably efficient, the subscriber or customer can satisfy his bill and the requirements of this section by paying or tendering to the person, firm corporation or receiver, operating or owning the telephone lines, such proportion of the rate fixed by law for the service as the service actually furnished bears to a reasonably efficient service.

In the event the service is not reasonably efficient, and the customer has paid in advance at the rate fixed by this section, he can deduct an amount proportionate to the deficiency in the service from the rate for the next month, and the person, firm, corporation or receiver operating or owning the telephone line shall be bound in all cases to receive said money and continue to furnish the service; provided that the amount of money paid by the customers is proportionate to the service rendered (Nov. 22, 1909, Ord. Bk. 3, p. 541 Sec. 1).

Said ordinance further provided a penalty of not less than Twenty five Dollars (\$25.00) and not exceeding One Hundred Dollars (\$100.00) for each violation of said Section 990 by charging a greater rate or toll for service than therein named, Section 991 whereof is hereby specially pleaded and is as follows:

"Sec. 991. Penalty: Any person, firm, corporation or receiver operating or owning telephone lines or exchanges within the limits of the City of Houston, Harris County Texas, engaged in the business of furnishing telephone connections and service to the citizens of said City of Houston, or any agent manager or superintendent thereof, who shall charge any greater rates or tolls for the services herein named than those hereinbefore fixed, or who shall refuse to continue to furnish the service because the customer fails or refuses to pay a greater amount for the telephone service than is fixed by Sec. 990, or that is payable under the next preceding section for the character of service rendered in the particular case, shall be deemed guilty of a misdeameanor and, upon conviction, shall be fined in any sum not less than Twenty-five Dollars (\$25.00) and not exceeding One Hundred Dollars (\$100.00) for each offense, and in case of failure or refusal to further furnish telephone service to the consumer or subscriber, it shall be a separate offense for each day that there is failure or refusal to furnish the service. (id.)"

15. Plaintiff further says that on May 10, 1915, the City of Houston passed an ordinance authorizing the purchase by this Plaintiff of the property owned by the Houston Home Telephone Company, a competing telephone company in the City of Houston, the same being entitled "An Ordinance authorizing the consolidation and merger of the Houston Telephone Exchange of The South-

western Telegraph and Telephone Company and the telephone exchange of the Houston Home Telephone Company, prescribing the terms and conditions of such consolidation

and merger, and declaring an emergency";

That Sub-section (e) of Section 1 of said ordinance which is

hereby specially pleaded, reads as follows:

"The Southwestern Telegraph and Telephone Company agrees that it will not increase rates as at present charged by it for service in the City of Houston, unless it appears upon a satisfactory showing to be made before the City Council of the City of Houston, of all receipts and disbursements, and said showing must, in order to justify or warrant a raise in the rates, reasonably prove that there exists a necessity for an increase of charges in order that said Company may earn a fair return upon its capital actually invested in the Houston plant. And it is agreed for a term of five years from this date that a fair return upon said capital and investment is not less than seven nor more than eight per cent."

On June 8, 1915, this plaintiff transmitted to the City of Houston its written acceptance of the above mentioned ordinance and thereafter acquired by purchase the property of the Houston Home Telephone Company.

16. During the year 1917 and for many years prior thereto and at the time of the passage of the said ordinance of 1909 and continuously from the date of the passage of said ordinance, plaintiff had been charging its subscribers in said City for telephone exchange service, the following rates:

For direct line business telephone and service \$5.00 per month. For direct line residence telephone and service \$2.00 per month.

17. On December 27, 1917, plaintiff, in compliance with the terms of the 1915 ordinance aforesaid, duly presented to the City Council of said City, by personal service, a showing in writing of all its receipts and disbursements in the operation of said telephone system

in the City of Houston, together with the fair value of its said property, used and useful in rendering the said service, which showing set forth the facts and figures in detail. That in and by said showing it was made to appear to said defendants and the said City Council of the City of Houston that plaintiff sustained a net loss for the year 1915 of \$103,998.40; for the year 1916, a net loss of \$136,762.28; for the first six months of the year 1917, a net loss of \$59,226.41; or a total net loss for the said period of two and one-half years of \$299,987.09 from the operation of said exchange; that said net loss is the excess of operating expenses over operating receipts without any return upon the value of plaintiff's property and the capital actually invested therein. That it was shown by said statement that the then existing capital actually invested in said

exchange was the sum of \$5,362,150.00, as of December 27, 1917. That said showing was satisfactory in form and reasonably proved that there existed a necessity for an increase of charges in order that plaintiff might earn a fair return upon the value of its property and the capital actually invested in its said Houston plant. That accordingly plaintiff filed with and as a part of its said showing, a proposed new rate schedule for said Houston exchange as follows:

New Rate Schedule.

Houston Exchange.

\$2.00 per month for measured service residence telephone, including 60 outgoing calls per month, excess calls 2¢ each. All incoming calls free.

\$3.00 per month for flat rate residence telephone service.

\$4.00 per month for measured service business telephones, including 80 outgoing calls per month, excess calls 3¢ each. All incoming calls free.

\$7.50 per month for flat rate business telephone service.

\$7.50 per month for P. B. X. Trunks.

No change change in rate for auxiliaries, extension telephones, P. B. X. Stations and miscallaneous equipment.

That said showing further established that said new rate schedule, on the basis of the operation for the year 1916, would have yielded additional revenue for that year in approximately the sum of \$167,415.00 or a net balance of operating receipts over operating disbursements for the year 1916 of \$30,652.72, if said new schedule had been in force during the year 1916; or a return of less than one per cent upon the value of the property and the capital actually invested in said property.

18. That on several occasions from time to time subsequent to said December 27, 1917, plaintiff discussed the proposed new schedule of rates with the said City authorities, and finally on April 9, 10, 11 and 12, 1918, a formal hearing under oath was had before

the said City Council from which it was further made to appear upon a satisfactory showing of all receipts and disbursements for the entire year 1917, that the plaintiff sustained a loss from the operation of said exchange for that year of \$132,281.54 without any allowance for any return upon the capital actually invested in said property, and upon the value of said property.

19. That the facts and figures submitted to said defendants by the showing in writing dates December 27, 1917, and in the oral hearing before said City Council on April 10 to 14,

1918, as herein alleged, were true and correct, and reasonably proved that there existed a necessity for an increase in charges in order that plaintiff might earn a fair return upon the value of its property and its capital actually invested in said plant, and that the proposed new schedule was less than sufficient to enable it to earn That the defendants, nevertheless, failed and such fair return. neglected to authorize the proposed new schedule or any increase whatever in rates or to take any action whatever in the premises, and that plaintiff continued to charge the old rates awaiting a decision by said defendants until August 1, 1918, when the United States, under a joint resolution of Congress of July 22, 1918, took unto itself the possession, control and operation of plaintiff's said telephone system as a war measure for the duration of the war, and thereafter continued to have and exercise such possession, control and operation by and through the President of the United States and the Postmaster General, to the exclusion of this plaintiff until August 1, 1919

That the operation of plaintiff's said plant in the City of Houston for the period stated was solely to the financial account of the United States; that on February 1, 1919, the Postmaster General put into effect in said Houston Exchange the proposed new schedule of rates as submitted by plaintiff to said defendants in its showing in writing of December 27, 1917, as hereinbefore alleged, and continued said schedule in force throughout the period of Federal operation. That said increase was made necessary by the losses found to be sustained as the result of the operation of the plant under the old schedule

of rates.

That on July 31, 1919 at midnight, the United States returned said telephone property to plaintiff under and by virtue of a joint resolution of Congress approved on July 11, 1919, which said resolution contained the following provision:

"That the existing toll and exchange telephone rates, as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue in force for a period not to exceed four months after this act takes effect, unless sooner modified or changed by the public authorities—state—municipal or otherwise—having control or jurisdiction of tolls, charges and rates or by contract or by voluntary reduction."

That on August 7, 1919, the Mayor of the City of Houston recommended to the City Council that this plaintiff be advised that the City would enforce its ordinance with reference to the rates to be charged for telephone service in said City, and on the same date
a motion or resolution was adopted by the City Council accepting said recommendation and on August 8, 1919, plaintiff's local manager at Houston received a letter from Honorable A. E. Amerman, Mayor of said City, reading as follows:

"In accordance with the motion of the City Council, this day passed, you are hereby notified that since the Government has relinquished control of The Southwestern Telegraph and Telephone Company, and the injunction granted by Judge Jack has thereby become inoperative the City of Houston will insist upon enforcement of the ordinance governing the rates and other matters pertaining to the business of the Southwestern Telegraph and Telephone Company of this City. You will kindly govern yourself accordingly."

That said action was taken by the governing body of the City of Houston without any notice whatsoever to plaintiff and as plaintiff is informed and believes, without any consideration whatsoever upon the part of the said City or its officials as to whether or not the telephone rates which had been put into effect by the Postmaster General were fair and reasonable, and said action was taken without giving plaintiff any opportunity whatsoever to appear and show cause why such action should not have been taken.

20. That during the year 1918 the total revenue realized from the operation of the Houston telephone exchange amounted to \$816,950.95 and the total expense amounted to \$1,018,742.73 leaving a loss of \$201,791.78 as a result of the operation of the Houston plant during said year of 1918; that operating expenses during the year 1919 have increased much faster than operating revenues would have increased with the higher rates in effect; that it has been necessary to make substantial increases in the wages of telephone operators and other employees during the latter half of the year 1919, and that the expenses involved in the operation of said exchange for the year 1920 will be in excess of the expenses of operating said exchange for the year 1919, which are considerable in excess of the operating expenses for the year 1918, and that as a result of the increased expense of operating said exchange an application of the proposed increase in rates at the present time will produce a much smaller annual return than would have been produced in 1918 and that the proposed increased rates are less than fair, just and reasonable, and are much lower than should be charged in order that a fair return may be realized on the value of the property and on the capital actually invested and used and useful in the Houston plant.

21. That the total revenues derived from the operation of the Houston telephone exchange from every source for the period of seven months ending August 31, 1919, during which the increased rates put into effect by the Postmaster General were charged, were \$615,779.27 and the total expenses during the same period were \$659,692.24, leaving a net loss of \$43,912.97; that for the two months of September and October 1919, during

which the rates prescribed by the said ordinance of 1919 were charged, the total revenues from the operation of said exchange were \$146,246.41, and the total expenses were \$213,761.44, leaving a net loss of \$67,515.03.

22. The fair value of plaintiff's said telephone exchange property constituting the Houston telephone exchange and its capital actually invested in said exchange, all of which is necessary and used and useful in the service of the public, and in the operation of the Houston exchange with necessary working capital, is in excess of five

and one-half million dollars.

The actual cost of maintaining and operating said exchange does and will exceed the total gross revenue under such rates as fixed and continued by said ordinance by more than \$405,000.00 per annum. Under the rates as fixed by said ordinance, the total gross revenue of said exchange from all sources each year is and will be \$46,000.00 short of enough to pay the actual cost of furnishing service, before making any allowance for depreciation, to subscribers in the City of Houston; after making allowance for depreciation, said revenues are and will be over \$405,000.00 short of enough to cover the actual cost of furnishing the service.

- 23. Plaintiff says further that the rates fixed by said ordinances, being the original rates hereinbefore mentioned, are confiscatory, unreasonable and insufficient to permit it to operate and maintain its said telephone exchange without actual loss, and are wholly insufficient to permit plaintiff to earn any return whatsoever upon its property and investment; that such ordinance continues and fixes confiscatory rates and is unconstitutional, void and unenforcible and contrary to and in violation of the Constitution of the United States and particularly the 14th Amendment thereto prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Texas, providing that no person's property shall be taken, damaged or destroyed for or applied to a public use without adequate compensation being made, and when taken, except for the use of the State, such compensation shall be first made or secured by a deposit of money.
- 24. Plaintiff says that such an ordinance and the penalties therein provided are unconstitutional, void and unenforcible and contrary to and in violation of the Constitution of the United States
 11 and particularly the 14th Amendment thereto guaranteeing to all persons the equal protection of the law and prohibiting the taking of property without due process of law.
- 25. Plaintiff says further that it is the purpose and intention of said City and of all of the defendants herein, to enforce and apply the said ordinance of 1909, and that said defendants are threatening to and will apply and enforce said ordinance against plaintiff unless restrained and enjoined from so doing; that plaintiff has no plain, adequate or complete remedy at law, and unless this Court of Equity takes jurisdiction hereof and grants plaintiff an injunction

as hereinafter prayed, plaintiff will suffer irreparable injury; that if said ordinance and the enforcement thereof be not enjoined, plaintiff, if it shall avoid the loss and confiscation of its property must and will charge and collect rates in excess of the rates prescribed by the City ordinance, which action will result in the filing against plaintiff of various suits for penalties under such ordinance and plaintiff will be forced to and will institute many and various suits for the collection of its charges, and to defend many and various suits for mandamus and canages on account of the refusal of plaintiff to furnish service at the rates prescribed by said ordinance. In consideration whereof and forasmuch as plaintiff is without an

adequate remedy, save in a Court of Equity, plaintiff prays:

First. That said ordinance of 1909 be declared unconstitutional. void and unenforcible and not binding upon plaintiff and that defendants be enjoined from interfering with plaintiff in charging rates which will produce a fair return and further that plaintiff be permitted to charge and collect as and from the date of August 1, 1919, the proposed schedule of rates set out in paragraph seventeen herein.

Second: That said City of Houston, its officials, agents and employees and said A. E. Amerman, Dan M. Moody, H. A. Halverton, Matthew Drennan, David Fitzgerald and Searcy Baker, as officers of said City as herein set forth, their successors, agents and servants, be temporarily and permanently enjoined and restrained from taking any steps to enforce said ordinance and from instituting or permitting or causing to be instituted or prosecuting or permitting or causing to be prosecuted any prosecution or legal proceedings of any kind whatsoever against plaintiff under said ordinance; from directing or permitting any attorney for said City to prosecute or assist in prosecuting plaintiff directly or indirectly for any failure or refusal by it to recognize or comply with said ordinance.

12 Third. That plaintiff may have such other and further relief both general and special as may be just and equitable.

D. O. FRANK. JOSEPH D. FRANK. WM. H. DULS, JOHN CHARLES HARRIS. Solicitors for Plaintiff.

Endorsements: Duplicate. No. 108. In Equity. The Southwestern Telegraph and Telephone Company v. The City of Houston et al. Amended and Substituted Bill of Complaint. Filed Dec. 15 nunc pro tunc as of Dec. 12, 1919. L. C. Masterson, Clerk, by J. L. Sexton, Deputy.

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Defendants' Answer.

March 24th, 1919.

In the District Court of the United States for the Southern District of Texas, Houston Division.

In Equity.

No. 108.

SOUTHWESTERN TELEGRAPH AND TELEPHONE COMPANY

VS.

THE CITY OF HOUSTON, TEXAS; A. E. AMERMAN, Mayor of the City of Houston, Texas; Dan M. Moody, Tax and Land Commissioner of the City of Houston; H. A. Halverton, Fire Commissioner of the City of Houston; Matthew Drennan, Street and Bridge Commissioner of the City of Houston; David Fitzgerald, Water Commissioner of the City of Houston; Kenneth Krahl, City Attorney of the City of Houston; W. J. Howard, City Solicitor of the City of Houston; Searcy Baker, Superintendent of Police of the City of Houston.

Come now the Defendants in the above entitled and numbered cause, The City of Houston, and A. E. Amerman, Mayor of the City of Houston; Dan M. Moody, Tax and Land Commissioner of the City of Houston; H. A. Halverton, Fire Commissioner of the City of Houston; Matthew Drennan, Street and Bridge Commissioner of the City of Houston; David Fitzgerald, Water Commissioner of the City of Houston; Kenneth Krahl, City Attorney of the City of Houston; W. J. Howard, City Solicitor of the City of Houston, and Searcy Baker, Superintendent of Police of the City of Houston.

W. J. Howard. City Solicitor of the City of Houston, and Searcy Baker, Superintendent of Police of the City of Houston, now and at all times savine and reserving to themselves all benefits and advantages of exception to the many errors, uncertainties, imperfections and insufficiencies in Complainant's bill of complaint contained, and for answer to the rule to show cause herein why an injunction should not issue against them as prayed for in Plaintiff's bill of complaint, say:

- These Defendants admit the allegations in paragraphs numbered 1 to 13, inclusive, of the first count of Plaintiff's bill of complaint.
- 2. These Defendants deny that Plaintiff's action as set forth by the first count of its bill of complaint arises under the Constitution and laws of the United States.
- 3. Defendants admit that during the year 1917, and for many years prior thereto, the Plaintiff was engaged in the telephone busi-

ness and had been charging its subscribers the rate set out in paragraph 15 of said complaint.

4. These Defendants deny that the said rates above referred to, and referred to in paragraph 16 of said complaint, have become unremunerative and produce no return on the property investment of Plaintiff, and deny that said rates are failing to pay the actual cost of furnishing said telephone service, but admit that the plaintiff submitted to the City Council on or about the 27th day of Decem-

ber, 1917, a brief statement accompanied with an applica-15 tion for an increase of rates, as set forth in said statement. That these Defendants deny that at the hearing referred to in said paragraph 16 of the bill of complaint, which was had on April 9th, 10th, 11th and 12th, 1918, the facts and figures were presented to the City Council showing that it was just and necessary that the proposed increase of rates be allowed, and deny also that the Plaintiff was losing great sums of money under the old schedule of rates, as alleged in paragraph 16. And these Defendants also deny that the expert employed by the City of Houston reported that in his opinion the telephone rates were not high enough to produce an adequate return upon the money invested in the property in the City of Houston, but that said expert reported to the City of Houston that if certain items were to be eliminated, and if The Southwestern Telegraph and Telephone Company were to be allowed excessive charges for traffic expenses and other matters set forth in the report, that a sur-charge of 18 per cent should be allowed during the period of the War in order to permit the said Telegraph and Telephone Company b make a return of seven per cent upon its property investment.

5. These Defendants admit that the City Council of the City of Houston recommended that the application of Plaintiff for an increase of telephone rates be not allowed, but deny that the Mayor of said City stated or admitted that the United States was empowered for fix rates for telephone service during war times, but that if any statement was made by the said Mayor in regard to the

matters set forth in paragraph 16, that said statement was to the effect that the Government had taken over control of the klegraph and telephone companies as a war measure, and had made contract with the telephone companies which were very liberal in heir nature, whereby the Government agreed to pay to the telephone companies not only an income of eight per cent in the way of divilends on the full amount of stock, and in addition thereto was allowed a very liberal fund for depreciation, agreed to pay interest charges and obligations upon the bonded indebtedness of the said ompanies, and that while said contract with the said companies regarded as very liberal and required more than the telephone ompanies were entitled to, that inasmuch as a state of war existed, lefelt it to be the duty of the City and of all patriotic citizens to coperate with the Government and manifest no intention during the eriod of the war to antagonize the Government in any course it semed advisable to be pursued, and for patriotic purposes, and for

such purpose only at such time, made no objection to the plan to be pursued by the Government. That while it was the purpose of the City of Houston during the existence of hostilities and the continuance of a state of actual warfare, to co-operate in every way with the United States Government and its representatives, as alleged in said paragraph 16, and not in any way antagonize the Government or at such time inquire into the legality of its acts, but that since such time conditions have radically changed, an armistice has been signed, which is generally regarded as a practical termination of his-

tilities, and conditions are now fast resuming their normal status such as existed prior to the War, and there are no reasons, patriotic or otherwise, which should require the City of Houston to submit to what it deems to be an unreasonable increase in rates by the Plaintiff company.

- 6. These Defendants do not deny the allegations in paragraph 17 of Plaintiff's bill of complaint, but say that all matters therein referred to are matters of public record, and that an examination of same will disclose the fact that no power is vested in the Postmaster General or President of the United States, by proclamation or otherwise, to fix the rates to be paid by subscribers of the Houston local telephone exchange.
- 7. These Defendants say that the matters alleged in paragraph 18 of the bill of complaint are matters purely within the knowledge of the Plaintiff company, and these Defendants are neither in a position to affirm or deny the same, but say that the execution of the contract referred to in said paragraph 18 could have no effect upon the right of the Postmaster General to fix rates for the local telephone exchange of the City of Houston; that no such power was vested in him by the Act of Congress of the United States referred to in Plaintiff's bill of complaint, and the making of a contract by the Postmaster General with the several telephone companies whereby he may have agreed to pay excessive charges would furnish no ground or reason for increasing the rate to be charged the subscribers of the Houston local telephone exchange in order to recoup

losses occasioned by the making of an improvident contract, if such it was, by the Postmaster General of the United States, but the said rates should be sufficient only to allow the complaining company to receive a sufficient return upon its investment, after the payment of its fixed charges and the allowance of a reasonable sum for depreciation.

8. Answering the allegations in the next paragraph of the Plaintiff's bill of complaint, numbered also 18, these Defendants deny that the value of the telephone property used and useful in the operation of the telephone exchange is in excess of \$5,000,000.00, but say the fact is that they are informed and believe that the value of the said properties is less then \$3,000,000.00—to be specific, \$2,731,000.00. These Defendants also deny that revenue under the existing rates is not sufficient to pay the expenses of operating the said exchange, but say that they are informed and believe, and so believing charge

the fact to be, that the revenues received from the rates charged prior to February 1st, 1919, were sufficient to pay operating expenses of said exchange, of the same was reasonably and economically operated, to allow for depreciation, to pay fixed charges and return a reasonable amount to the investor.

- 8. The facts alleged in paragraph 19 of Plaintiff's bill of complaint are peculiarly known to the Plaintiff, and these Defendants are not in a position to affirm or deny the same, and therefore ask that Plaintiff be put upon proof of such allegation.
- 9. These Defendants say that the allegations in paragraph 20 in said bill of complaint are peculiarly within the knowledge of the Plaintiff, and these Defendants are not in position to either affirm or deny the same, and say that said allegations are wholly irrelevant and immaterial, and can not be considered in the determination of the issues involved in this suit.
- 10. These Defendants deny that the hearing referred to in paragraph 21 of Plaintiff's bill of complaint was in fact a hearing; that while it is true that what was referred to and designated as a hearing was had before a representative of the Postmaster General's Department on February 8th, 1919, but said hearing amounted to nothing more than a conference between the representatives of the Postmaster General's Department and the representative and the Mayor of the City of Houston, wherein the representatives of the Postmaster General's Department advanced certain reasons why the proposed rates should be installed, and the representatives of the City of Houston advanced certain reasons why said rates should not be installed; that said hearing was not in the nature of a judicial hearing, but was had before officers or representatives who had no judicial power and had no authority or jurisdiction to enter or enforce any order, and what the instructions of the Postmaster General to this Plaintiff following said hearing were, these Defendants are not in position to know.
- 11. These Defendants deny that the Postmaster General or his representative had any power or discretion in regard to the fixing of rates to be paid by the subscribers of the Houston telephone exchange, or to enforce and collect any schedule rates.
- 20 12. These Defendants deny that they have attempted or are still attempting to prevent the Plaintiff, or anyone else, from carrying out lawful orders of the Postmaster General, but do admit that they have attempted and are still attempting to prevent the Plaintiff from enforcing and collecting the schedule of rates which were prescribed by the Postmaster General, as alleged in paragraph 22 of said complaint, denying, however, that said schedule of rates were lawfully prescribed by the Postmaster General.
- 13. These Defendants deny that they have called upon the subscribers to refuse to pay any rate they saw fit to pay, but admit that they have, in an orderly and legal manner, attempted to prevent the

Plaintiff company from charging or collecting the increase of rates charged that the said Plaintiff proposed to install, charge and collect, thus believing that the said increased rates are unreasonable, excessive and extortionate, in pursuance of what they conceive to be their legal duty as public officers they instituted legal proceedings to prevent the installing and charging of such rates, and are now prosecuting such legal proceedings for the purpose and in the hope of preventing its collection of the said rates so deemed to be unreasonable, excessive and extortionate.

14. These Defendants admit the passage of the ordinance referred to in paragraph 23 of Plaintiff's bill of complaint.

These Defendants admit that they have taken the position that the Postmaster General has no authority to regulate rates to be charged for telephone service in the City of Houston,

and it is their purpose to use all lawful means and remedies to prevent the Plaintiff, notwithstanding any instructions of the Postmaster General, to collect the rates and charges it proposes to collect from the subscribers of the Houston telephone exchange, and in this connection these Defendants say, that the attempt of the Postmaster General to install and collect the proposed rates is in fact an attempt arbitrarily upon his part to usurp and exercise an authority which was never conferred upon him by law and which he does not possess; and these Defendants say that the very law from which said Postmaster General claims to derive his authority expressly reserves to the State the right to regulate rates, and in the State of Texas this right and power to regulate rates of telephone companies has been legally delegated to the City of Houston to regulate rates to be charged subscribers of said Houston telephone exchange, and the said rates have by the City of Houston, by means of the ordinance set forth in Plaintiff's bill of complaint, been by the City of Houston, acting through its City Council in the exercise of its fair and reasonable discretion, been fixed and determined, and the said rates so fixed and determined by the City of Houston, acting as before stated through its City Council, are the fair and reasonable rates for the service rendered.

16. And these Defendants denying that the complainant has any right to further answer to the bill of complaint herein, and denying that the Plaintiff is entitled to any injunction or any other relief whatever, submits for the reasons hereinbefore recited and set forth, that the complainant is not entitled to any relief against these respondents.

All of which matters and things these Defendants are ready and willing to aver, maintain and prove as this Honorable Court shall direct, and therefore prays to be hence dismissed, with their reasonable costs and charged in this behalf most wrongfully sustained.

W. J. HOWARD, KENNETH KRAHL, Solicitors for Defendants.

For answer to the second count in Plaintiff's said bill of complaint contained, these Defendants now and at all times saving and reserving unto themselves all benefits and advantages of exception to the many errors, uncertainties, imperfections and insufficiencies in the Plaintiff's said bill of complaint contained, for answer to the rule and order to show cause why temporary injunction should not issue as prayed for by Plaintiff in its bill, say:

- 1. These Defendants admit the allegations contained in paragraphs numbered 1 to 13, inclusive, of the Second Count contained in said bill.
- Defendants admit the allegations contained in paragraphs 14 and 16 of the Second Count of said bill of complaint.
- 23 3. These Defendants deny that the rates referred to in paragraph 17 of said Second Count were or have become wholly unremunerative and produce no return whatever upon the property and investment of Plaintiff, and deny that said rates have failed and are failing to pay the actual cost to furnish the telephone exchange service referred to in said paragraph 17; but these Defendants admit that on or about December 27th, 1917, the said Plaintiff did present to the Mayor and Commissioners of the City of Houston a statement similar to that referred to and set out in said paragraph 17.
- 4. These Defendants admit that there was a formal hearing held before the City Council on the dates set forth in paragraph 20 of said Second Count of the bill of complaint and at the time therein set out; but these Defendants deny that the Plaintiff produced facts and figures showing that it was just and necessary that the proposed increase in rates be allowed and that Plaintiff was losing considerable money under the old schedule of rates, and these Defendants deny the allegations contained in said paragraph 20, that the Engineer who was employed by the City of Houston employed arbitrary and erroneous methods in arriving at the valuation of Plaintiff's property, and undervalued the property which constituted Plaintiff's local exchange in the City of Houston. These Defendants deny that the Engineer so employed by the City of Houston undervalued the said properties to a sum amounting to \$2,375,864.00, or in any other sum, and as they are informed and believe, and so believing charge the fact to

be, that the valuation made by the said Engineer so employed 24 by the City of Houston was properly made and showed the fair and reasonable value of the said property to be less than

\$3,000,000.00, to-wit, \$2,731,000.00.

5. These Defendants deny that the said Engineer so employed unconditionally reported that the Plaintiff was entitled to an increase of the telephone rates of 18 per cent in order that it might realize 7 per cent on its investment in the local telephone exchange system of the City of Houston, as alleged in said paragraph 20, but the said Engineer merely reported that if certain items which he contended

should not be allowed the Plaintiff company were allowed, that it would be necessary to increase the telephone rates 18 per cent in order that said return of 7 per cent might be had; but it appears from the report of said Engineer that upon a proper method of determining the earnings of the said Plaintiff company, it was realizing a reasonable return upon its investment.

6. These Defendants admit the passage of the ordinance mentioned and referred to in paragraph 21 of said Second Count of said bill of complaint, but say that the said ordinance is not binding upon the City of Houston in such a way as to entitle the Plaintiff to an increase of rates upon every temporary change of condition which might tend to increase the cost of operation temporarily, or which might tend to increase the value of Plaintiff's property based upon a reproduction value; that said ordinance was passed during a period of normal conditions and was intended to apply and should

apply only to normal conditions, and that the City of Houston had no power by ordinance, contract or in any other manner to waive or surrender its right of police regulation over the said Southwestern Telegraph and Telephone Company, including its right to determine the rates which could be charged by the said company.

7. These Defendants admit that the City of Houston, as alleged in paragraph 22 of said bill of complaint, refused to allow any increase whatever in the rates that were being paid by the subscribers to the Houston telephone exchange, but they deny that the said Plaintiff, in accordance with the ordinance set out in said paragraph 21 of the said Second Count, or in any other manner presented to the City Council of the City of Houston facts and figures showing that the said Plaintiff was entitled to an increase of the rates then in force, and they deny that the facts and figures presented by the Plaintiff reasonably prove that there existed a necessity for an increase in charges of the rates in order that Plaintiff might earn a fair return upon its capital actually invested in the Houston plant. And these Defendants deny that the facts and figures submitted by the Plaintiff to the City Council, as alleged in said paragraph 22, showed that the said Plaintiff company was annually sustaining a loss and not earning anything for dividends or the payment of inter-That while the computations and statements submitted by Plaintiff were so computed as to show what was termed a net loss, that said figures and computations were not accepted as correct, and

the said City of Houston employed an expert to investigate the values of the said Plaintiff company, and all other matters affecting its right to an increase of rates, and the report of the said Engineer so employed refuted the contention of Plaintiff that it was not earning anything upon its investment in the Houston telephone exchange, and the said report of said Engineer further showed that the Plaintiff was realizing a substantial return upon its investment, even after allowing the Plaintiff company many large items, which, in the opinion of said Engineer, it was not entitled to.

8. Answering the allegations in paragraph 24 of the Second Count of said bill of complaint, these Defendants say, that they have not the information at hand to state the amount of revenues received by the Houston telephone exchange during the year 1918, or the amount of its total expenses, but they do not believe that the expenses of the exchange for said year exceeded its income, and so believing, deny said allegation. And further answering the allegations in said paragraph these Defendants say, that they understand and believe, and so believing charge the fact to be, that the Plaintiff company keeps no accurate books showing the income which should properly be credited to the Houston telephone exchange; that a large part of the earnings of the said exchange exists in the handling of what are known as long distance calls, and the Plaintiff, as these Defendants believe, so carry on their system of audits and accounting as to allow but a small portion of the revenues resulting from long distance calls handled by local exchanges to such local exchange

in which the calls originated. And these Defendants further 27 say in answer to the allegations of paragraph 24, that the said Southwestern Telegraph and Telephone Company is the owner of and conducts many local exchanges, as well as long distance lines, and the said company itself, in turn, is practically owned or dominated by a larger telegraph and telephone organization to which it is required and compelled to pay tribute; and as these Defendants are informed and believe, there is no method or system of bookkeeping by which even the Plaintiff itself could accurately state all of the items charged as expenses in operating the Houston telephone That it is, as these Defendants are informed and believe. the habit or practice of the said Plaintiff company to arbitrarily charge against the Houston telephone exchange certain portions of the expenses incurred generally by the said Plaintiff, as well as a portion of the expenses of its parent company, or the company that dominates and controls it, and these Defendants believe, and so believing charge the fact to be, that upon a proper method of computation the receipts of the Houston telephone exchange are greatly in excess of the operating expenses of said exchange, and in such an amount as to make a reasonable return upon the capital investment.

9. Defendants admit that the rates mentioned in paragraph 25 of said Second Count have, as alleged therein, been in effect since about the year 1901, but deny that said scheduled rates have never produced more than a fair return, and it is the information and belief of Defendants that for many of said years the return on the investment

of the Plaintiff was a very liberal one, and Defendants deny that the expenses involved in the operation and maintenance of the Houston exchange have steadily increased until Plaintiff was compelled to increase its rates on February 1st, 1919, to prevent any further losses on its investment in the City of Houston, but charge the fact to be that any increase in the cost of maintenance and operation have not been steady, but have been due to abnormal and temporary conditions, the cause of which has now ceased, and there is no reason why the said expenses of maintenance and opera-

tion should not speedily return to normal. These Defendants admit of the passage and existence of the ordinance set out in said paragraph 25.

- 10. Answering paragraph 26 of said Second Count, these Defendants are not in a position to say what the Plaintiff would have done had it not been for the ordinances above referred to, but they have no reason to believe that Plaintiff would not have raised the rates, as indicated in the allegations contained in said paragraph.
- 11. Answering the allegations of paragraph 27 of said Second Count, these Defendants deny that Plaintiff's telephone exchange property within the boundaries of the City of Houston, with the necessary working capital, is in excess of Five and One-half Millions of Dollars, but say the fact is, as they are informed, as they believe reliably, that the fair and reasonable value of said properties, based upon proper method of valuation, is less than Three Million Dollars, to-wit, \$2,731,000.00.
- 29 12. These Defendants, upon information and belief, deny the allegations in paragraph 28 of said Second Count, and in this connection say, that it is their belief, and so believing charge the fact to be, that if the Houston telephone exchange is allowed credit for all of the revenues to which it is properly and legally entitled, and if it is charged with no operating expenses other than those with which it should be fairly charged, the revenues from the said exchange produced by the rates heretofore in effect would greatly exceed the expenses of the operation of the said exchange.
- 13. While these Defendants admit that the rates as fixed and continued and established under the ordinance referred to in paragraph 29 have been actually tried out by the Plaintiff for a number of years, to the abandonment thereof and the announcement of its new schedule, they deny that said trials have shown such rates to be unreasonably low, and say that the fact is that although the said schedule of rates have been in force as admitted by the Plaintiff in their bill, from the year 1901 to practically the end of the year 1917, there has never been any complaint whatever made by the said Plaintiff company in regard to the said rates, nor had there, so far as these Defendants know or believe, been any application for an increase of rates, but said application for increase of rates was on account of the increase in expense of operation, brought about by abnormal conditions caused by the War, and as these Defendants believe in furtherance of a plan conceived by the Plaintiff to seize upon war prices and get permanent rates fixed, based upon

30 reproduction values at a time when all material and labor was abnormally high on account of temporary conditions occasioned by the great war in which this country, together with the greater number of the countries of the world, were engaged.

14. Answering the allegations of paragraph 30 in said Second count, these Defendants say that while there may have been an increase recently in the cost of operating the Houston exchange, such

increase was due to the abnormal conditions caused by the War, and these Defendants deny that said operating costs have increased as alleged in said paragraph, and they deny that the cost of operating and maintaining said exchange greatly exceeds and will continue to exceed the increase in revenue under the old rate schedule fixed by the City Ordinances above referred to, and they deny that such ordinance is confiscatory and, if enforced, will continue to confiscate the Plaintiff's property in the City of Houston, but say the fact is that the natural tendency is for the cost of operating the said exchange to resume the normal and for the price of material and labor to decrease, the cause which brought about such increase in the cost of operation no longer exists, and the fact is that many materials used in the operating of said exchange have, since the signing of the armistice, shown a marked decrease.

15. While it is not denied that the City of Houston is a reasonably "prosperous community," as alleged in paragraph 32 of said Second Count, still, there are a great number of people who are now subscribers to the service furnished by the Houston telephone exchange who are unable to pay the increased rate of 50 per cent, which it is proposed by Plaintiff to collect. That there are, as these Defendants believe, hundreds, if not thousands, of citizens of said community upon which the increased rates will work a great hardship, and to many it will result in depriving them of their phone service, which has become a practical necessity and a valuable

property right to be thereby confiscated.

16. The Defendants deny the allegations of paragraph 33, that the rates fixed by the ordinances above referred to are confiscatory, unreasonable and insufficient to permit said telephone company to operate its telephone exchange without actual loss, and deny that said rates are wholly insufficient to permit Plaintiff to earn any profits on its business or any return on its investment, and denies that such ordinance in any way contravenes any provision of the Constitution of the United States or of the State of Texas, which prohibits taking of property without due process of law, or which may guarantee to all persons the equal protection of the law; but the fact is, as these Defendants are informed and believe, the rates fixed by said ordinance are sufficient to pay all fixed charges, operating expenses, allow reasonable funds for depreciation, and allow a reasonable return upon the investment.

17. Answering the allegations in paragraphs 34, 35, 36, 37, 38 and 39 of said Second Count, these Defendants say that while it is probably true that some of the subscribers to the Houston telephone exchange have their phones without the City limits of the City of Houston, that such subscribers, when compared with the whole number of subscribers to said exchange, are very few; the other allegations set up in the said paragraphs are merely conclusions of law, which these Defendants are not in a posi-

tion to answer.

- 18. Answering the allegations in paragraph 40 of said Second Count, these Defendants deny that the penalties prescribed by the ordinance referred to in said paragraph are excessive.
- 19. Answering the allegations in paragraph 41, these Defendants say that if any of the penalties referred to in said paragraph are incurred by the Plaintiff, it will be on account of their violation of the valid, legal and reasonable ordinances of the City of Houston; that the said ordinances, as these Defendants are informed and believe, prescribe fair, just and reasonable rates for the service to be rendered by the Plaintiff, and the enforcement of the said ordinances by the said City of Houston will be but a fair and reasonable exercise of the police power of said City.
- 20. These Defendants deny that the ordinances referred to in paragraph 42 of said Second Count are void or confiscatory in their nature, or that they deprive the Plaintiff of property without due process of law.
- 21. These Defendants deny the allegations in paragraph 47 of said Second Count, that the losses sustained by Plaintiff will amount to not less than \$14,000.00 per month, but say that they are informed and believe, and so believing charge the fact to be, that the said Plaintiff is, under the rates heretofore existing, earning sufficient not only to pay all operating expenses, fixed charges ad provide for a depreciation fund, but in addition thereto sufficient to pay a fair and reasonable return upon its investment.
- 22. These Defendants deny the allegations in paragraph 48 of said Second Count, wherein it is alleged that by the giving of an appropriate and sufficient bond or other security, that the City of Houston and the other Defendants and the people and Plaintiff's subscribers and patrons will be suitably protected if it should be finally determined that this Plaintiff is not entitled to charge and collect the schedule of rates which was put in effect February 1st, 1919, and say that the fact is that the tendering of said bond is but a specious argument advanced for the purpose of making it appear that Plaintiff's bill presents equity. That the fact is that the said bond or other security tendered will not protect the City of Houston and the other Defendants, or the people of the City of Houston or the subscribers to the Plaintiff's telephone exchange. method will compel the Defendants and the people of the City of Houston, and the said subscribers, to advance or loan money to the Plaintiff under penalty of being deprived of the telephone service which they have heretofore had. That hundreds, if not thousands, of the said subscribers cannot afford to make such loan or advancement, and that for many of them to make such loan or advancement to the said Plaintiff would impose a great hardship and burden upon many of the said subscribers; and as these Defendants are

34 informed and believe, many of them who have a fixed small salary or income which is now barely sufficient for the support of themselves and their families, will, if they are required to make such loan or advancement as a condition precedent to the

procurement of the telephone service which they have heretofore had. be compelled to forego such service, whereby they will be deprived of a valuable property right, the use of a telephone having, under existing conditions, become practically a household necessity, and particularly so to the poorer classes of subscribers who can not afford to employ servants, and the use of the telephone in ordering household necessities is practically indispensable. That moreover, the rates which the Plaintiff proposes to install are very generally considered by the subscribers as unreasonable, excessive and extortionate. and many subscribers who would be able to make the loan or advancement required by the bond method suggested by the Plaintiff would feeling that the collection of the proposed rates would be an imposition, remove their phones as these Defendants believe, and by the removal of each phone the number of subscribers or persons who could be reached by the subscribers who retained the service would be reduced and the efficiency and usefulness of the telephone service would thereby be greatly impaired, if not wholly disrupted.

Further answering the allegations of said paragraphs 48 and 49, these Defendants say, that the facts present no such condition as would justify or warrant a change in the present rates pending the final hearing of this litigation whereby the status now exist-

35 ing between the Plaintiff company and its subscribers would be changed, many telephones would in all probability be discontinued, the use of the phones to those who retained the service would be curtailed, and the value and efficiency of the service would be greatly impaired, if not practically disrupted; that the losses claimed by the Plaintiff company, even if they existed, are, as disclosed by its bill of complaint, due to abnormal conditions caused by the War; that it was and is the duty of the said Plaintiff company to bear its portion of the burdens of war; that during the period of the war it was a principle recognized by all patriotic citizens that no one should obtain profits during the war, and if the Plaintiff during the period of the war, on account of the increased cost of material and labor, has been deprived of an income on its property, or if it even sustained a slight loss, its experience is but the common experience of all American citizens who adopted the proper view point in regard to earnings during the period in which the country was involved in the great struggle from which the world has just emerged.

As shown by Plaintiff's bill, from the year 1901 until the latter part of the year 1917, it, without complaint, operated under the rates in force prior to February 1st, 1919, and that the lack of earnings, or even slight losses, if any such were sustained, were directly due to the temporary and abnormal conditions brought about by the War; that the War has now practically terminated and the tendency is toward lower cost of labor and material, whereby

the tendency is toward lower cost of labor and material, whereby
the conditions existing prior to the War and the conditions
prior to 1917 will be restored; that many of the materials
necessary in the operation of the telephone company have
since the War greatly declined, and it would be but fair, just and
equitable for the plaintiff to continue the rates heretofore existing

for such a period as will permit it to be determined whether the prewar conditions under which it was enabled to earn proper returns upon its investment will be restored; but as these Defendants believe and say, and believing charge the fact to be, it is not the purpose of the Plaintiff merely to enforce increased rates such as will enable them to pay their operating expenses and a return on their investment during the temporary abnormal period, but that the said Plaintiff has seized upon the abnormal conditions that have existed in the country for the past two years and is undertaking to have permanent rates established based on the high cost of operating expenses, and to have established a rate that will pay a fair return upon its investment, not at cost price of the cost of reproduction in normal times, but upon the cost of reproduction based upon values that are unusually and abnormally high on account of the conditions caused by the War and upon values greatly in excess of the amount actually invested by the Plaintiff, whereby the Plaintiff will be permitted and enabled to recover not only a fair return upon its capital investment, but also upon the profit realized by having its properties valued at the peak, that is, at the very highest point known to the history of the company, and which was occasioned by abnormal conditions, such values being temporary and subject to rapid decline to normal. These Defendants say

37 that under these circumstances the Plaintiff should be required to try out the rates heretofore existing for a reasonable time, that it may be determined if normal conditions will not again prevail, before they are permitted by the mere giving of a bond to disturb and to a great extent disrupt the telephone service of the City of Houston.

And these Defendants further answering paragraphs 48 and 49, say that the said bond does not afford adequate protection, because there are some 25,000 subscribers to the telephone exchange of the City of Houston, which will require the expenditure of vast amounts in keeping books and accounts that should be saved to the people or be used in providing better telephone service for the subscribers, and that even if said sums are expended in the keeping of such additional accounts or amounts, it will be necessary for each subscriber to collect back his own individual excess payment and he will be entirely at the mercy of the Plaintiff, for should it decline to refund the subscriber, in order to collect back such excess payments he would be compelled to resort to the Courts and incur the expense of collecting, which would be out of proportion to the amount involved, and in a great majority of cases it is probable the subscriber would rather forego the collection of the excess payment than incur the expense and trouble necessitated in compelling the refund.

23. Further answering said bill of complaint, these Defendants say that the said Southwestern Telegraph and Telephone Company is not now furnishing good and sufficient service to the subscribers and users of the telephone service in the City of Houston, that there is great difficulty in getting connection with the Central exchange, and after Central answers, in very numer-

ous cases it is an unreasonably long time before connection is made putting the subscriber in connection with the station which is called: in very numerous cases the wrong number or station is called, and often after connection and the conversation is being held by subseribers, the lines are discontinued and the connection interrupted; and often the number of one of the phones not being known, the conversation is entirely terminated, and the said service in many ways too numerous to mention is inefficient and far below what constitutes standard or reasonable telephone service; and even if it should be determined that said Plaintiff company is not now receiving a reasonable return upon the amount of its capital and property invested in the Houston telephone exchange, which these Defendants say they have reason to believe and do believe is not the case. still these Defendants and the subscribers to the telephone service furnished by the Plaintiff in its Houston telephone exchange are obligated and bound to pay only such sum or rate as the character of the service furnished is reasonably worth, and that the rates now in force as fixed by the ordinances of the City of Houston are fair and reasonable rates for good service; but even if they were not sufficient for good service, the service furnished to the subscribers by the Houston telephone exchange is not good and efficient service, nor reasonably efficient, and taking into consideration the inefficient

character of the service furnished by said Defendant company the said rates as now fixed by the said ordinances of 39 the City of Houston are more than the service furnished is

reasonably worth.

24. That regardless of the return on the capital investment, the telephone service now furnished to subscribers of the Houston telephone exchange, even if it was efficient, is not worth the increased rates the said Plaintiff is so seeking to install and collect, and said service is worth no more than the rate now provided for in the said City ordinances set up in Plaintiff's bill of complaint.

25. These Defendants further answering say, that there are many economies that could be put in effect by the Plaintiff company whereby a large portion of the operating expenses of the said Houston telephone exchange would be eliminated; that the said Plaintiff company is paying excessive amounts for administration supervision, and that by procuring the said administration supervision at a fair and reasonable cost, its operating expenses would be greatly reduced, and its net revenues and the return upon its investment greatly increased, to-wit, in the sum of not less than Eleven Thousand, Five Hundred and No/100 (\$11,500.00) Dollars. siad Plaintiff company is incurring unreasonable and excessive traffic expenses; that by a proper and economic operation of the Houston telephone exchange, the traffic expenses could and should be reduced in a large amount, to-wit, approximately Sixty-five Thousand and No/100 (\$65,000.00) Dollars, which could be added to net revenue and greatly increase the earnings of the said Plaintiff com-40

pany, resulting in a very substantial addition to the return upon the capital invested by the said company in the Hous-

ton telephone exchange.

- 26. That the said Plaintiff company is not now charging a sufficient amount for the toll service rendered and furnished by the Houston telephone exchange. That there should be charged in addition to the amount that is now being charged for such service an additional sum of at least Ten Thousand and No/100 (\$10,000.00) Dollars, whereby the net earnings of the said Houston telephone company would be increased by said sum, and the yearly return upon the capital investment in the said exchange would be greatly increased. That there is charged to the operating expense of the Houston telephone exchange expenses incurred in handling the long distance tolls, in excess of the amount received by the local exchange for the service so rendered.
- 27. That the said Plaintiff company is owned by the American Telegraph and Telephone Company, that is, all the stock of the Plaintiff company is owned by the said American Telegraph and Telephone Company; that the said Southwestern Telegraph and Telephone Company operates numerous exchanges in the State of Texas and other States of the Southwest; that the said Plaintiff company, as these Defendants are informed and believe. allocates to the Houston telephone exchange and charges to the operating expenses of such exchange large amounts that are not properly chargeable to such operating expenses, and the said Plaintiff company fur-

ther pays to the parent company, or dominating company, the said American Telegraph and Telephone Company, large amounts for alleged services that do not constitute proper charges to operating expenses of the Houston telephone exchange, and by the elimination of these charges the net revenues of the Plaintiff company can be greatly increased.

- 28. These Defendants further answering say, that the Plaintiff claims too large an amount for depreciation reserve; that it is claiming the right to collect from the earnings of the said Houston exchange the sum of 6 per cent, or more, upon all its physical properties to take care of the plant at the end of its useful life and to restore the effects of rot, rust, decay, obsolescence, etc., which said amount is excessive by at least 2 per cent.
- 29. Further answering, these Defendants say that Plaintiff is estopped to claim any other valuation upon its property, used and useful in the Houston telephone exchange, than the cost valuation, for this:
- (a) That for many years prior to the year 1917, it, in compliance with the requirements of certain ordinances passed by the City Council of the City of Houston, and effective as valid ordinances, filed with the City its valuation based entirely upon the original cost of the property, and that it was not until 1917, when the cost of material and labor had greatly advanced, that any claim of valuation upon the reproduction method, in order to determine rates, was asserted or claimed.

(b) That in what is known as the Merger Ordinance, same being Sub-section "E" of Section 1 of an ordinance passed May 10th, 1915, by the City Council of the City of Houston, and entitled: "An ordinance authorizing the consolidation and merger of the Houston telephone exchange of The Southwestern Telegraph and Telephone Company and the telephone exchange of the Houston Home Telephone Company," prescribing the terms and conditions of such consolidation and merger and declaring an emergency, it was provided that the Plaintiff could earn a fair return upon its capital actually invested in the Houston plant, it being agreed that for a term of five years from said date that a fair return upon said capital and investment should not be less than 7 nor more than 8 per cent; and the said Plaintiff company, by accepting the said ordinance, which it did do, contracted, agreed and bound itself not to require a return upon anything other than the capital actually invested in the Houston plant, and said Plaintiff is now estopped by reason of said ordinance and the acceptance thereof by it, of asserting any value to said property used in the Houston telephone exchange greater or other than that of the original cost of said property.

30. These Defendants denying that the complainant has any right to further answer to the bill of complaint, and denying that Plaintiff is entitled to any injunction, or any other relief whatever, submits for the reasons hereinbefore stated and set forth, that the Plaintiff is not entitled to any relief against these respondents, all of which matters and things these Defendants are willing to aver, maintain and prove, as this Honorable Court shall direct, and therefore pray

to be dismissed hence with their reasonable costs and charges

in this cause most reasonably sustained.

W. J. HOWARD, KENNETH KRAHL, Solicitors for Defendants.

STATE OF TEXAS, County of Harris:

Before me, the undersigned authority, on this day personally appeared A. E. Amerman, the Mayor and chief executive officer of the City of Houston, who being first duly sworn, on oath states: That he is the Mayor of the City of Houston, one of the Defendants in the above entitled cause, and that he has read the foregoing answer and knows the contents thereof, and that the matters and things stated therein as facts are true, and that the matters stated upon information and belief he verily believes as true.

A. E. AMERMAN.

Subscribed and sworn to before me by the said A. E. Amerman this 24th day of March, A. D., 1919.

[SEAL.]

P. C. DEL BARTO

P. C. DEL BARTO, Notary Public in and for Harris County, Texas. 44 (Endorsed on Back:) No. 108. In Equity. In the District Court of the United States for the Southern District of Texas, Houston. Southwestern Telegraph & Telephone Company vs. The City of Houston, Texas, et al. Answer. Filed 24th day of March, 1919. L. C. Masterson, Clerk, by J. L. Sexton, Deputy.

45 Order Appointing J. Llewellyn Special Master.

Filed August 27, 1919.

United States District Court, Western District of Louisiana.

No. 108.

In Equity.

SOUTHWESTERN TEL. & TEL. Co.

VS.

CITY OF HOUSTON.

This case now being at issue, the Court considering that the services of a Master are necessary to aid the Court and economize its time, and for the purpose of exepediting the final hearing of said cause, the Court on its own motion appoints J. Llewellyn of Liberty Tex., Special Master herein.

It is further ordered that this case be referred to said Master to take the evidence and report his findings of fact and conclusions of

law thereon.

The said Special Master is authorized to set the case for hearing at such time and place as in his opinion may be most convenient to all parties.

GEO. WHITFIELD JACK, Judge.

August 25, 1919.

Endorsements: No. 108 Eq. The Southwestern Telegraph & Telephone Co. vs. The City of Houston et al. Order appointing J. Liewellyn Special Master. Filed 27th day of Aug. 1919. L. C. Masterson, Clerk, by J. L. Sexton Deputy. Stencil: U. S. District Court. Filed Aug. 25, 1919. W. B. Lee, Clerk West Dist. of Louisiana.

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Report of Special Master in Chancery.

Filed June 7, 1920.

In the District Court of the United States for the Southern District of Texas, Houston Division.

No. 108.

In Equity.

THE SOUTHWESTERN TELEGRAPH AND TELEPHONE COMPANY, Plaintiff,

versus

THE CITY OF HOUSTON et al., Defendants.

Report of Special Master in Chancery.

To the Honorable George Whitfield Jack, Judge:

This cause was referred to me as a Special Master by the Court on August 25, 1919. The order of reference directed that I take the evidence and report to the Court my findings of fact and conclusions as to the law, arising thereon. This order authorized the hearings necessary at such times and places as might be most convenient to all concerned.

General Statement.

The plaintiff, the Southwestern Telegraph and Telephone Company, is a New York corporation having a permit to do business in the State of Texas and owns and operates a local telephone plant in the City of Houston in said State. The defendants are the City of Houston a municipal corporation organized and existing by virtue of a special charter granted to it by the State of Texas, and Hon. A. E. Amerman, Mayor and Dan M. Moody, H. A. Halverton, Matthew Drennan and David Fitzgerald, who constitute the City Council of the City of Houston and Searcy Baker, its Chief of Police.

The action os of a civil nature and the matter in controversy exceeds the sum or value of Three Thousand Dollars (\$3,000.00) and arises under the Constitution and laws of the United States. The plaintiff is a citizen of the State of New York and the defendants are all citizens of the State of Texas. It was found that it would be more convenient for counsel and the witnesses to hold the hearings in the City of Houston and said hearings were, therefore held in Houston in the Federal Building and in the Council Chamber in the City Hall when available and, when not, in the Conference Room in

the Telephone Building. The hearings were begun on December 15, 1919, and were concluded April 24 1920, forty one days being consumed in taking the testimony.

Messrs. C. R. Triay and P. G. Houchins, court reporters, were employed to report the proceedings, their fees being paid by the plaintiff and defendants jointly on accounts approved by the Master according to arrangements made prior to the commencement of the hearings between the parties to the suit and the court reporters, with the approval of the Master. The total fees, one half of which were paid by the plaintiff and one half by the defendants amounted to \$3,799.90. \$2,443.45 being for per diem and \$1,356.50 being for

extra copies furnished counsel.

As indicated by the number of days consumed in the hearings and the amount of money paid the court reporters, a vast amount of testimony, both oral and written was received, accompanied by a large number of various kind of exhibits. Statements were made by counsel for both the plaintiff and the defendants and carried into the record with quotations from numerous decisions and citations of various authorities, making in all quite a bulky and extensive record. It was found desirable to take recesses at intervals during the hearings owing to other engagements on the part of the Master and counsel for the plaintiff and defendants as well as the

inability of witnesses to appear at particular times.

The case was developed by both sides with exceeding care, evidencing thorough preparation. It may not be amiss at this time to say that counsel for the parties evidenced thorough acquaintance with the law and facts involved. They were uniformly courteous and considerate and gave the Master every assistance possible to arrive at proper conclusions upon the various questions involved. They have filed trial briefs which were submitted to me on May 10, 1920, which are made a part of the record herein, which forcibly and thoroughly present the views of counsel with reference to matters at issue. With all it was a very pleasant and instructive proceeding from the standpoint of the Master though necessarily tedious and long drawn out.

The Issue.

The question to be determined by the Court is whether the value of the plaintiff's property in Houston is confiscated by the application of the rates fixed for telephone service by the ordinance of the City adopted in the year 1909, same being Section 990 of the Revised

Code of Ordinances of the City of Houston. The law of the case seems to be settled by the decisions of our courts of last resort that a court of equity will intervene only to prevent the unlawful taking of property without just compensation in rate controversies. The court has no concern as to a rate fixed, unless such rate has the effect of confiscating the value of property.

As to the facts, I understand that the burden of proof is upon the plaintiff, if not to show by "clear and convincing" proof, to show by a preponderance of the evidence that the rates fixed are con-The rates fixed by the ordinance in question were fixed by the City Council of the City of Houston. The testimony should be strong enough to overcome the presumption that ordinarily obtains that public officers do their duty. To be entitled to the relief sought herein plaintiff should show when the City Council after the period of Government control, sought to impose the rates fixed by the ordinance of 1909 that such body was acting without due regard for plaintiff's rights, the presumption obtaining in the absence of proof to the contrary, that such action was warranted under the then

existing facts.

A correct solution of the one question involved necessitates a finding as to what is the present value of the property used and useful in the service of the public, the amount of net income, if any, produced under existing rates fixed by the ordinance in question, after deducting from the gross income proper charges for the expenses of operation and an allowance of a correct amount as a reserve for depreciation, and what constitutes a fair return at this time on the value of the property so used and useful under existing circumstances.

After all, the property used by plaintiff in furnishing telephone service in the City of Houston belongs to The Southwestern Telegraph and Telephone Company. No element of partnership in the ownership of this property exists between this corporation and the City of Houston or its citizenship. The value of this property is protected to the owner thereof from confiscation by the Constitution of the United States, as well as the State of Texas. This constitutional guarantee operates upon the present value of the property and not upon what it cost the owner or some prior owner years ago. If the property has increased in value while in the hands of its owners, such owners are entitled to the benefit of such increase, as had it been destroyed or had it lessened in value, the owners alone would have borne this loss. This is true notwithstanding such property may be devoted to public utility purposes. These views 49 are expressed in the decisions of the courts quoted below:

In the Minnesota Rate Cases, 230 U. S. 352, 454, 458,

The Supreme Court said:

"It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership, and it is that property and not the original cost of it, of which the owner may not be deprived without due process of law.

It must be remembered that we are concerned with the charge of confiscation of property by the denial of a fair return for its use; and to determine the truth of the charge there is sought to be ascertained

the present value of the property.'

In Wilcox vs. Consolidated Gas Company 212 U. S. 19, 52, the Supreme Court said:

"And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property which legally enters into the consideration of the question of rates has increased in value since it was acquired the company is entitled to the benefit of such increase."

In Consolidated Gas Company vs. City of New York, 157 Fed. 855, The Court said:

"The value of the investment of any manufacturer in plant, factory or goods or all three, is what his possessions would sell for upon a fair transfer from a willing vendor to a willing buyer, and it can make no difference that such value is affected by the efforts of himself or others, by whim or fashion or (what is really the same thing) by the advance of land values in the opinion of the buying public. It is equally immaterial that such value is affected by difficulties of reproduction. If it be true that a pipe line under New York of 1907 is worth more than was a pipe line under the city of 1827, then the owner thereof owns that value and that such advance arose wholly or partly from difficulties of duplication created by the city itself is a matter of no moment. Indeed, the causes of either appreciation or depreciation are alike unimportant, if the fact of value be conceded or proved; but that ultimate inquiry is so often so difficult that original cost and reasons for changes in value become legitimate subjects of investigation, as checks upon expert estimates or bookkeeping inaccurate and perhaps intentionally misleading. Cf. Ames v. Union Pacific R. R. (C. C.) 64 Fed., at pages 178, 179. If 50 years ago, by the payment of certain money, one acquired a factory and the land appurtenant thereto and continues today his original business there his investment is the factory and the land, not the money originally paid; and unless his business shows a return equivalent to what land and building, or land alone would give if devoted to other purposes (having due regard to cost of change) that man is engaged in a losing venture, and is not receiving a fair return from his investment The so-called "money value" of real or i. e., the land and building. personal property is but a conveniently short method of expressing present potential usefulness and "investment" becomes meaningless if construed to mean what the thing invested in, cost generations ago. Property whether real or personal is only valuable when useful. usefulness commonly depends on the business purposes to which it is or may be applied. Such business is a living thing, and may flourish or wither, appreciate or depreciate; but whatever happens, its present usefulness, expressed in financial terms, must be its value.'

In the case of the City and County of Denver vs. Denver Union Water Company 246 U. SS. 178, decided by the United States Supreme Court on March 4, 1918, the following language is found:

50 "There can be no question of the company's right to adequate compensation for the use of its property employed, and necessarily employed in the public service; nor can it be doubted that

the property must be valued as property in use. * * * What we have said establishes the propriety of estimating complainant's property on the basis of present market values as to land and reproduction cost, less depreciation as to structures."

In my judgment the above quotations most admirably epitomize the fundamental rules to be applied to the correct solution of the controversy in this case. It is a matter of small importance that the rules there stated agree with my sense of what the law should be. It is the law laid down by the court of last resort and whether we approve of the holdings there made or not, we are nevertheless bound thereby.

The Value of the Property.

The first and probably the most important question to be answered in this case is what is the real value of plaintiff's property used and useful in the service of the public in the City of Houston. No absolute answer can be given to the question. Any figure fixed necessarily cannot be mathematically and absolutely exact. Value is not a matter to be determined by a mathematical formula. We can only hope to approach a correct answer by exercising a reasonable judgment after a careful consideration of all the relevant facts. sult attained will always be affected by the soundness of the judgment of the particular person expressing the opinion as to the value. No two minds would be able to consider this record and arrive at identical conclusions with reference to the value of the property. But the question notwithstanding its difficulty and the frailty of the human mind, must be answered. At best we can hope to reach a reasonably correct approximation. The discussion of value and of the method of ascertaining the same in the opinion of the Minnesota rate cases, 230 U. S. 350, quoted below especially commends itself to the In that case the court said:

"The ascertainment of that value is not controlled by artificial It is not a matter of formula, but there must be a reasonable judgment, having its basis in a proper consideration of all relevant facts. The scope of the inquiry was this broadly described in Smyth v. Ames (169 U. S. pp. 546, 547) 'In order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present, as compared with the original, cost of construction, the probable earning capacity of the property under particular rates prescribed by statute and the sum required to meet operating expenses, are all matters for consideration and are to be given such weight as may be just and right in each case. We do not say that there may not beother matters to be regarded in estimating the value of the prop-What the company is entitled to ask, is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

51 If we were seeking to ascertain the value of a commodity such as wheat oats or corn which is being bought and sold daily on the open market, a reasonably satisfactory judgment as to the value thereof could be obtained thereon by adopting as the value. the market quotations. In the consideration of the value of this property we have no such satisfactory guide, because no plants such as this are being bought and sold daily on the open market. When we seek to determine the value of something that has no market value in the ordinary sense of that term, some other method or means of determining the question must be evolved. If we desire to know the value of a structure or other thing of value that is not being sold on the open market, the first and paramount measure of value seized upon by the human mind is the question of what would it cost to reproduce the structure or article at this time. To my mind what it would cost to reproduce the property or one of like kind under existing circumstances is one, and perhaps the best measure of its value.

In the case of Des Moines Gas Company vs. City of Des Moines 238 U. S. 168, the Supreme Court quoting with approval the report

of the Master, said:

"It is not a question of what was actually expended in the plant in question, but what would it cost to reproduce a similar plant at the present time. It is through this method we reach the present value of this plant new, and then when it is properly depreciated, according to the condition, life and age of its various parts, we reach the present value of the plant in its present condition. It is not a perfect method but it is the best method therefor, and results as nearly as possible in giving the present value of the plant. No other method known has proved so satisfactory."

Manifestly the cost of reproducing a particular thing does not fix its value for the reason that numerous other factors enter into the question of value. What a structure cost years ago furnishes but little evidence of its present value. It is a matter of common knowledge that a building, for instance, that was valued at \$50,000 five years ago could now be sold on the open market for largely in excess of that sum. At the same time, in arriving at the value of anything at this time we must take into consideration that there has been an abrupt rise in commodity and labor prices-I believe that these prices will go down. As one of the witnesses expressed it, he hoped they Many people, including one of the would go down gradually. witnesses, at lease, believe that process will recede. The fact that numerous people believe that prices will recede in the future affects

the value of property whether in fact they do recede or not. I think these views as to the law to be applied and the 52 method of ascertaining the value, but follow the rules laid down for out guidance by the Supreme Court in the cases above

quoted and other cases cited in the briefs on file herein.

In ascertaining the value of this property I can be guided only by the law and by the evidence introduced. Believing that the

reproduction cost under normal circumstances affords the strongest evidence of value and that the original cost furnishes but little evidence of present value, it follows that I am attaching in these findings considerably more weight to the testimony as to value based on the reproduction theory than that based alone on the historical or cost value. The weight to be given to the testimony of the various witnesses is clearly recognized and aptly expressed by defendants' counsel in their brief on page 18 thereof. They say:

"We will not undertake to discuss the evidence of the numerous witnesses introduced by the plaintiff who undertook to show the reproduction costs of this property. If that method is adopted by the Court we could not hope to minimize the value within any reasonable limits."

The plaintiff in the case introduced several witnesses in whose testimony I could detect no evidence of personal insincerity whose opinion as to value necessarily carried weight, for the reason that they showed themselves thoroughly conversant with property of this

character and methods of valuing same.

As of October 1, 1919, a complete inventory of the physical property belonging to the plaintiff in the City of Houston was taken and made up by Mr. F. M. Hoag, or under his direction. This inventory seems to have been taken with a great deal of care and I believe it fairly shows the amount of property on hand at the time of the taking. The correctness of the inventory was not questioned by the defendant and I think same may be accepted as a true and correct inventory by all concerned.

Basing their testimony on this Hoag inventory a number of witnesses, who seemed to have had considerable experience in that regard, made valuation of all of plaintiff's property. The final judgment of these witnesses as to a fair present value of the property is

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3	8,000,000 $7,700,000$

In arriving at their valuations these witnesses applied, onethe average prices for labor and materials for the two years immediately preceding the taking of the inventory, another the average prices for five years, and the others—prices as of October and December 1919. Mr. Lyndon an expert introduced by the City, stated that had he applied the methods used by the other experts to wit, in the main the reproduction method of valuation, he would have arrived at approximately the same conclusion arrived at by these witnesses. I feel that I am bound to give this testimony as to value considerable weight. As stated, these witnesses were shown to have had considerable learning and experience. It will be noted that the lowest valuation placed on this property by any of

these witnesses was \$7,000,000. A fair average of their valuations

amounts to approximately \$7,500,000.

While I feel bound by the testimony of these witnesses, because they applied what I conceive to be, under the law and in accordance with reason, proper methods of determining the value, and while I think the City's experts applied faulty methods in arriving at the value which necessarily led to wrong results, having the effect of making their testimony of less weight, I cannot give an honest judgment of value equal to the average of the values sworn to by these experts. I think I should be in a position to say as to the value of this property that the testimony of the witnesses has been sufficient to establish to a reasonable certainty the value I find and sufficient to overcome any presumption arising from the record. I believe the property is worth at least \$6,000,000.

I therefore, find from the vast preponderance of the testimony that the property owned by the plaintiff company used and useful in the telephone service in the City of Houston is of the value \$6.

000,000. This finding as to value is made up as follows:

Value of physical property	\$5,000,000
Going concern value	765,000
Working capital	238,000

\$6,003,000

in round numbers \$6,000,000.

The figure as to the value of the physical property is its value in its present condition. Its value new, or its undepreciated value I find to be \$5,500,000.

Plaintiff's Income.

The plaintiff's general exchange revenues for the year of 1919 were \$880,439.00. During six months of the year, however, rates in excess of \$5.00 and \$2.00 prescribed by the ordinance of 1909 were in effect, namely the Government rates of \$7.50 and \$3.00. In testing the \$5.00 and \$2.00 rates the excess revenue received from the \$7.50 and \$3.00 rates must be deducted. This amounted to \$115,955.00, making the income received under the contested rates \$764,484.00. In addition plaintiff received miscellaneous operating revenue of \$22,472.00 and also toll service revenue of \$121,302.00, making a total revenue during 1919 of \$908,258.00. This revenue plaintiff's books show it received in the Houston exchange and the correctness of same is not contested, except that defendants claim that the exchange should be credited with a larger proportion of the toll service revenue.

Allowance for Handling Toll Business.

Plaintiff company credits to the Houston exchange 25% of all long distance tolls collected in Houston. This credit is allowed the Houston exchange for its part in the operation of the toll lines and for billing and collecting the toll accounts. No part of the toll line

equipment that is possible to be segregated from the local equipment is inventoried or appraised in arriving at the value of the Houston exchange. The only property belonging to the Houston exchange used in handling a toll message is the equipment from the local subscribers' station to the long distance toll boards. evidence shows thare is credited to the Houston exchange an average allowance of 14.9 cents per long distance call. This amount is greater than the amount allowed any one of the eight largest independent exchanges in the State by independent long distance lines with which they connect. Independent long distance lines connecting with the plaintiff company's exchanges allow plaintiff the same rate for like services. This allowance to the Houston exchange is larger than this plaintiff pays to over 300 independent exchanges with which its long distance lines connect as they do with the Hous-No one of the four largest independent long distance systems in Texas pays to any independent exchanges more than is credited to the Houston exchange per call handled. tends to show that 25% is the customary allowance made by State Commissions throughout the country. It seems not to be practicable

to segregate the costs of handling these long distance messages as between the local exchanges and the long distance lines.

Of course the City of Houston has no authority to fix the rate of charge for long distance business as these long distance lines are largely outside of the City of Houston. Whether the plaintiff com-pany as a whole makes or loses money in handling long distance messages is beside the question. I am not entirely clear that the actual cost of the services rendered by the local exchange is the proper measure of the allowance to be made the Houston exchange for the services rendered in view of the ownership by the plaintiff company of both the local and long distance lines. In view of the fact that this amount seems to be generally approved as above stated by the courts and the approval especially in the Fort Worth case and the somewhat greater weight to be attached to the testimony that this allowance is fair and, in view of the further fact that any reasonably fair allowance made could not affect the ultimate result as applied to the instant case, I have decided to approve as a correct allowance this 25% of the toll line revenue collected in Houston. interest in this connection I quote the opinion in the case of Cumberland Telephone and Telegraph Company vs. Louisville, 137 Fed. 637 as follows:

"In 1908 the gross earnings, as shown by the master, were the sum of \$325,838.30, exclusive of the item presently to be noticed. In this sum is included \$7,632.11 which represents 15 per cent of all the tolls collected by the company upon all long-distance messages sent from this city over the company's long distance wires. The other 85 per cent of such collections were not taken into its accounts by the company as part of its earnings in this city. The proof renders it entirely clear that the company uniformly contracts with numerous other companies, in many of which it has no interest, to handle all the toll business between them, so far as it goes over its

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lines for a compensation fixed upon a basis of 15 per cent of tolls on outgoing messages only, and we are free to say upon the testimony that this appears to afford a fair compensation for the service it renders both upon outgoing and upon incoming messages, and if this is so in respect to outside companies we know of no very good reason why the same rule may not be applied here, because very much the larger part of the company's own toll service is over wires and through instrumentalities located entirely outside of Louisville, that city furnishing the facilities of a terminal point only. pany's property here contributes only a small item in the name of the property the company actually uses, in long distance service over its These are matters of importance to be remembered in connection with our duty to ascertain what is a fair income upon that part of the company's property which is located at this point. The master concluded, however, that the 15 per cent was not a fair division and that the other S5 per cent, which amounted in 1908 to \$43,248.70 should also be included in the gross earnings of the company here, which of course, would require it to put into any estimate of its earnings upon the property it has in Louisville, a great sum which its local property did not in fact earn, but which was earned by other property located all over the South. the master's conclusion upon this item was to swell the gross earnings of the company at this point from \$325,838.30 to \$369,087.00. think that neither the testimony nor sound reason will justify all of this addition, but while we are extremely doubtful of its correctness we have concluded, under the peculiar circumstances of this case, to add to the 15 per cent already included in the gross earnings the further sum of \$5,088.08 to cover the cost of operating here, the toll lines extending elsewhere, thus allowing for the local work 25% instead of 15 per cent."

Plaintiff's Expenses.

Plaintiff's total expenses as carried on its books with reference to the Houston property amount to \$1.226,312.00. There is controversy as to certain items of this expense, especially with reference to the 4½ per cent payment under the so-called licensed contract and the amount of the annual reserve for depreciation; also as to general and traffic expenses.

The 41/2 Per Cent Payment.

Among other operating expenses the plaintiff company pays to the American Telephone and Telegraph Company 4½ per cent of certain gross receipts amounting to approximately 95 per cent of the total revenue of the Houston exchange, in payment for certain services and the use of instruments owned by the American Telephone and Telegraph Company and leased to plaintiff company. In connection with this payment should be considered the fact that the American Telephone and Telegraph Company owns practically all of the stock of the plaintiff company. That fact to my mind

does not mean that this contract between plaintiff company and the American Telephone and Telegraph company is necessarily unfair and unjust, but it does mean that the terms of such contract would naturally be scrutinized more carefully than if made between two companies dealing at arm's length.

The Supreme Court of Michigan in the case of City of Detroit vs. Michigan R. R. Commission and Michigan State Telephone Company decided April 10, 1920, quoted with approval the opinion of the Commission of that State as to this 4½ per cent payment as

follows:

"The majority of the Commission refer to this contract in its opinion and we quote from it:

"The American Telephone and Telegraph Company itself a large corporation, financed by the issuance of its own securities and occupying the same relative position to telephone companies of several other states, is able with practicability to, and does maintain extensive laboratories and offices, where careful experiments are constantly being made, desigend to produce improvements and economies in It employs engineers, accountants, auditors and others whose services are highly beneficial to telephone companies, whose employment would be impossible to any of these associated companies The cost to any individual company of maintaining a staff of skilled assistants of like character and ability would be prohibitive; yet, under this arrangement the Michigan State Telephone Company now has the benefit of all that these men do or produce in the way of improvements, refinements or economies in telephone facilities, service or methods of operation. True, the results of the investigations and experiments of these men, once they are achieved may be given to many associated companies as readily as to one, but that does not lessen the value of them to any one of the associated companies.

The Michigan State Telephone Company's securities are taken and handled by the American Telephone and Telegraph Company at uniformly low interest rates and without large discounts.

This service is one, the value and importance of which it is impossible to calculate. Much of its materials and supplies are furnished to it through the Western Electric Company at prices, upon terms and of a quality, comparing very favorably with those of other supply houses. These items were considered of such definite importance by Mr. Burch that he very properly took them into consideration in the computation of interest during the period of construction, the same benefits accruing during that period, continue to the company. A lengthy statement of the services and benefits accruing to the Michigan State Telephone Company, through its association with the American Telephone and Telephone Company, is a part of the proofs in this case. * * *"

The effect of this arrangement is that the State Company is given

The effect of this arrangement is that the State Company is given the benefit of the services of the most efficient engineers, accountants, traffic men, patent lawyers and others possible to secure. They are furnished with certain standard parts of all telephone sets, which are kept in repair for them. They are aided in their financial matters

extensively.

These are services which the Company needs, which are useful to it, inuring to the benefit of its patrons, which, if they could otherwise be had at all, certainly could not be obtained at any less cost than under their contract with the American Telephone & Telegraph It is apparent that this contract should receive the ap-The facilities used by public proval of the Commission. utility companies are the property of such companies. Their affairs. subject to the restrictions of the law, are subject to the management and control of their governing body. They are at liberty to make contracts, to purchase facilities and property deemed by them to be necessary and proper for the conduct of their business, to finance their operations according to the dictates of their judgment, and so long as this management is fairly economical and so long as it is honest and does not amount to a fraud upon the public, the Commission has no power to interfere.

This principle of law is well stated by Chief Justice Brewer in the case of the Interstate Commerve v. the Chicago Great Western Railroad Company, 209 U. S. 108, where he says: "It must be remembered that railroads are the private property of their owners: that while from the public character of the work in which they are engaged the public has the power to prescribe rules for securing faithful and efficient service and equality between shippers and communities, yet in no proper sense is the public a general manager." This same principle is enunciated in Great Northern Railway Company v. Minnesota Commission, 238 U. S. 340 and in Chicago, Milwaukee & St. Paul Railroad vs. Wisconsin, 238 U. S. 491; The Supreme Court of New York in the case of People ex Rel. v. Stevens,

203 N. Y. 7 said:

"The discretion of a public service Commission cannot override the discretion of the officers of a corporation in the management of It follows in the opinion of the commission that unless the contracts between the Michigan State Telephone Company and the American Telephone & Telegraph Company, under which certain facilities are furnished and certain engineering accounting and other services are rendered to the Michigan State Telephone Company and between the Michigan State Telephone Company and the Western Electric Company, under which the applicant company purchases certain of its supplies and materials, amount to a fraud upon the public by reason of the price paid by the Michigan State Telephone Company being excessive, then the disbursements of the Michigan State Telephone Company, in pursuance of these contracts, must be considered legitimate and proper charges upon its revenues. It was made to appear upon the hearing before the Commission by Mr. Burch that the prices and terms at which the Western Electric Company furnished property and facilities to the Michigan State Telephone Company were very favorable, that the facilities furnished by the Western Electric Company were a good standard, the world over and furnish an excellent basis for fixing unit prices."

This opinion by the Commission is evidently based on a state of facts such as we have in the instant case. It points out very clearly the advantages obtained from the American Telephone and Telegraph Company for which this payment is made by the plaintiff to said company. There is quite a volume of testimony in this record with reference to this payment. That plaintiff gets full value for

the amount of money paid to the parent company is very clearly and decisively shown by the testimony. The opinion quoted sums up the advantages accruing to the Houston Exchange as shown by the testimony in this case. I unqualifiedly approve this 4½ per cent payment as an operating charge against the gross income received by the company.

The Annual Reserve for Depreciation.

The plaintiff has the right and it is its duty to set aside an amount annually as a reserve for depreciation. The purpose of the reserve is to enable plaintiff to replace its property when and as it comes to the end of its useful life. It takes care of wear and tear, rust and rot, obsolescense, inadequacy, changes in the art, public demands and requirements and casualties. The right and duty to set aside such a reserve is conceded by all parties, the amount only set aside by plaintiff being contested by the City. The Amount to be properly set aside for such purpose is a matter of judgment, taking into consideration the character and requirements of the property. Four witnesses for the plaintiff, after making thorough studies, gave as their opinions the following amounts as proper percentages for the rate of this reserve.

Hoag		0				0									٠		٠		٠		٠		6.33%
Toppin	g									۰			٠			0		٠			٠		7.01%
Player					*				*			*											6.43%
Gates							0						٠										6.36%

These conclusions were based on the experience of the witnesses in the telephone business, with knowledge of the particular property in question. Their findings being based on more definite knowledge and upon more complete and careful occupations are somewhat more satisfactory than estimates made by the other witnesses. I, therefore adopt the lowest of the figures and find that 6.33% of the value new, of the physical property or \$348,150.00 was a proper amount to set aside during the year 1919 as a reserve for depreciation. As of some interest in connection with the proper annual rate of reserve, a large number of decisions, both court and commission, which I have noted, indicate a general average of between six and seven per cent for telephone exchange property. The court in the Fort Worth case approved the finding of the Master of 6.67 per cent as proper for the property in that city. It is believed that the rate for the reserve should not be materially different in Houston, if anything it should perhaps be higher in Houston.

General Expense.

At Dallas and St. Louis, are maintained general offices where a great deal of the executive work and practically all of the general accounting work is done for the property of plaintiff in this State, and plaintiff in accordance with the requirements of the Interstate Commerce Commission assigns a proportional pro rata part of the expense to each of its exchanges. It seems to me that the services performed y the general offices are necessary to the exchange and make for economy. The Centralization of the executive, administrative and accounting work is of material benefit to the Houston exchange, it appears that the company pays out this money. The evidence amply sustains and requires a finding that the assignment or apportionment made is fair and reasonable.

Traffic Expenses.

Eighty-five per cent of these expenses are paid to and for its operators in Houston. I approve these items of expenses and find that plaintiff's reasonable traffic expense for the year 1919 amounted — \$418,005.00.

The Revenues, Expenses and Net Results.

The evidence gives in detail the various items of revenue and expense. I have condensed the facts as I find them to be in the following summary.

Revenue, Expenses, Net Results, 1919.

Revenues:

Total

General exchange revenues \$880,439.00 less \$115,-955.00 due to increased rates being in effect February 1, to August 1. (Scott Ex. 171 and Lyndon Ex. No. 6)	\$ 764,484.00
Toll service revenue	121,302.00
Miscellaneous operating revenue	22,472.00
Total	\$908,258.00
Expenses:	
Current Maintenance	\$129,956.00
Traffic	418,005.00
Commercial	84,076.00
General, executive, legal, insurance, etc	48,641.00
Uncollectibles	15,084.00
Taxes	123,461.00
Payments for instruments and services	43,528.00
	348,150.00
Reserve for depreciation 6.33%	3,561.00
Other deductions	0,001.00

\$1,214,462.00

Total Total	Expenses Revenues	 	 						 					$\substack{1,214,462.00\\908,258.00}$
	Loss												_	

This does not include any amount for interest, dividends of for a return upon the property. The figures given are for the full 90 year of 1919 under the rates sought to be imposed and continued by the City ordinance of 1909. For the preceding three years the evidence shows that the property did not pay its expenses under such rates and that for 1920 conditions indicate that an even greater loss may be expected than occurred in the preceding years.

Rate of Return.

Taking into consideration the money invested, the locality of the investment, the risks incident to and the character of the business, I find that eight per cent is a fair rate of return on the value of plaintiff's property, and that a rate of return less than eight per cent is confiscatory.

Such a finding is fully sustained by the evidence. If we are permitted to take notice of decrees of this Court not connected with this litigation it may be noted that in the Street Car case recently decided—this Court approved a finding by the Master that an eight per cent rate of return was fair. It is not believed that there could be any material difference in the fair rate of return allowable to these utilities operating in the same city. In the case of Lincoln Gas & Electric Light Company vs. City of Lincoln, 250 U. S. 256, decided June 2, 1919, the Supreme Court said:

"It is a matter of common knowledge that, owing principally to the World War the costs of labor and supplies of every kind have greatly advanced since the ordinance was adopted, and largely since this case was last heard in the court below. And it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants or similar public utilities a few years ago furnishes no safe criterion for the present or for the future."

On page 10 of the defendants' brief, suggestion is made by counsel for the City that plaintiff is estopped by subdivision (e) of Section 1 of the merger ordinance of 1915 to make a claim for a fair return on its property fixing the value thereof, on any theory other than the cost thereof. I understand that the defendants have contended that this subdivision of said ordinance is not binding on the City to the extent, at least, of fixing the amount of fair return on the theory that the City could not bargain away its right to fix rates, citing the case of City of San Antonio vs. Altgelt, 200 U. S., 304. If that contention is sound and that subdivision not binding upon the city, it is not believed that it could be binding on plaintiff as

the contract would then lack mutuality and be unilateral, binding on neither.

It occurs, however, in this particular litigation that the question of estoppel by the ordinance could not arise in any event for the reason that we are compelled to find from the evidence that the plaintiff is not making a fair return on the value of its property, however that value might be determined.

Counsel for the City again suggest that the plaintiff is not entitled to the relief sought herein, because it is claimed that it has not made a full disclosure of all the facts with reference to the costs, especially of services and material furnished plaintiff by the American Telephone and Telegraph Company and the Western Electric Company. The American Telephone and Telegraph Company owns practically all of the stock of the plaintiff company and of the Western Electric Company. No fault can be found with the maxim that "he who comes into a court of equity, must come with clean hands."

The weight and preponderance of the evidence compel a finding that the 4½ per cent payment made the American Telephone and Telegraph Company is made for valuable and amply sufficient services. This evidence further shows that the supplies furnished plaintiff company by the Western Electric Company is furnished at prices on the whole, less than the same character of supplies could be procured from any other source.

These corporations furnishing supplies and services to the plaintiff company are in law, at least, separate legal entities. Certainly there are other sources from which the services in part, at least, furnished by the American Telephone and Telegraph Company could be procured other than from that company. I think this is true also as to the major part of the supplies furnished by the Western Electric Company.

So long as plaintiff company is charged fair and reasonable prices for services and materials furnished by these other legal entities and no fraud is practiced, it is not believed that it is necessary before plaintiff is entitled to the relief sought herein to show the costs of these services and property furnished plaintiff by the American Telephone and Telegraph Company and the Western Electric Company, although the stock of plaintiff and of the Western Electric Company is practically all owned by the American Telephone and Telegraph Company. In discharging the burden cast upon it in this case the plaintiff should show by reasonably satisfactory evidence that it is entitled to the relief sought. This does not mean that to have clean hands it must produce all the evidence available or possible to be furnished, but only sufficient evidence to demonstrate that its property is being confiscated. If the rates for

furnishing telephone service are fixed at presumably fair rates, and subsequent to the fixing of such rates the cost of furnishing the service has largely increased, it would naturally occur to the man in the street that some corresponding increase in rates would be necessary to afford a profit. That such increase in the cost of operation has occurred, is a matter of common knowledge and

is generally recognized with regard to other public utilities, especially the railroads. It applies to every business under present conditions. These conditions being shown, the burden of proof is practically met.

Conclusion

From the findings of fact above indicated, compelled by the evidence with reference to plaintiff's present income and costs of operation, it is apparent that the rates fixed by the ordinance of 1909 applied under present conditions prevent plaintiff from obtaining a fair return on the value of its property used and useful in rendering telephone service in Houston Texas, and that such rates are, therefore confiscatory and that the enforcement of this ordinance under such conditions should be enjoined, with the usual reservation that if these conditions change so that the rates fixed in this ordinance are no longer confiscatory, the City may apply to the court for a proper modification of the decree.

Respectfully submitted,

J. LLEWELLYN, Special Master in Chancery.

Dated June 5, 1920.

Endorsements: No. 108 Eq. The Southwestern Telegraph & Telephone Co. vs. The City of Houston et al. Report of Special Master in Chancery. Filed 7th day of June, 1920. L. C. Masterson, clerk; by J. L. Sexton, deputy.

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Defendant's Exceptions to Master's Report.

Filed June 17, 1920.

In the District Court of the United States for the Southern District of Texas, at Houston.

Equity. No. 108.

THE SOUTHWESTERN TELEGRAPH & TELEPHONE COMPANY

VS.

CITY OF HOUSTON et al.

Now comes the defendants in the above entitled and numbered cause and make exceptions to the report of the special Master in Chancery appointed by this court, to whom this cause was referred to take the proofs and evidence of the respective parties and report his conclusions of fact and law thereon, by an order of this court made on the 25th day of August, 1919 and which report executed in compliance with said order bears date on the 5th day of June 1920, and also filed in this cause on the 7th day of June 1920.

1st. For this, that the said Master has found decided and reported, as appears on page 9 of his report, that the reproduction method affords the strongest evidence of value and that the original cost furnishes but little evidence of present value, and in attaching more weight to the testimony of the value based on the reproduction theory than that based alone on the historical or cost value.

Whereas, the Master should have found, reported and decided that at least as much, if not more, weight should have been given to the historical or original cost, than to the value based upon the present cost of reproducing the Houston Telephone Exchange the property

involved herein.

2nd. For this, that the said Master has found, decided and reported, as appears on page 11 of his report, that the property owned by the plaintiff company used and useful in the telephone service, in the City of Houston is of the value of \$6,000,000.

Whereas, the Master should, from the evidence have found decided and reported that the value of the property of the plaintiff company used and useful in the telephone service in the

City of Houston is of the value of \$3,000,000.00.

3rd. For that the Master has found, decided and reported as appears on page 11 of his report, that the value of the physical property in its present condition used and useful by the plaintiff in the telephone service in the use of the City of Houston, is \$5,500,000.

Whereas, the Master should have found, decided and reported that the value of the physical property of the plaintiff used and useful of the telephone service in the City of Houston, was not more than

\$2,750,000.

4th. For this, that the Master found decided and reported as appears on page 11 of his report that in addition to the physical property of the plaintiff, used and useful in the telephone service of the City of Houston such property had an intangible value, styled "Going Concern Value" amounting to \$750,000.

Whereas, from the evidence, the Master should have found, reported and decided that the intangible assets, including "Going Concern Value" or cost of establishing business, was not in excess of

\$50,000.

5th. For this, that the Master has found, decided and reported, as appears on page 11 of his report, that the plaintiff is entitled to an

allowance for working capital of \$238,000.

Whereas from the evidence, the Master should have found, decided and reported that the plaintiff was entitled to working capital not in excess of \$100,000.

6th. For this, that the Master has found, decided and reported as appears from page 13, of his report that 25 per cent of the toll revenue collected in Houston, which the company credits to the Houston exchange as owners of such exchange, is a fair allowance to such exchange to cover its part in the operation of the toll lines and for billing and collecting the toll accounts.

Whereas the Master should have found that all the property of the Houston exchange was in addition to the service it furnished to local subscribers, being also used jointly with the toll lines of the plaintiff company, to earn a large amount of tolls, same being for the year 1919, approximately \$400,000, and that the value of the property of the Houston exchange used and useful for furnishing local telephone service in the City of Houston should be reduced by

the proportionate use of such property in handling such long distance tolls, and should have further found decided and reported that 25 per cent was not a sufficient amount to be credited to the revenues of the Houston exchange, but that at least 60 per cent of such toll collections should be credited to such Houston exchange.

7th. For this that the Master found decided and reported, as appears on page 17 of his report, that the charge of 4½ per cent on certain gross receipts of the Houston Exchange, amounting to approximately 95 per cent of the total gross receipts of the Houston exchange, which is paid to The American Telegraph & Telephone Company in payment for certain services and the use of certain instruments owned by The American Telegraph & Telephone Company, and leased to plaintiff Company, was a proper operating charge against the said gross income received by the plaintiff company from the operation of the Houston telephone exchange.

Whereas, the Master should have found decided and reported that the cost of said services and the use or rental of said instruments was not shown by plaintiff and that for this reason the said charge should

have been either greatly reduced or wholly disallowed.

8th. For this, that the Master found, decided and reported, as shown on pages 17 and 18 of his report, that it was the right and duty of the plaintiff, in order to enable plaintiff to replace its property used and useful in the Houston telephone service, when it should come to the end of its useful life, and to take care of wear, tear, rust, rot, obsolescence, inadequacy changes in the art, business demands requirements and casualties, the sum of 6.33 per cent upon the value new of the physical property, or \$348,150 for the year 1919, as a reserve for depreciation.

Whereas, the Master should have found, decided and reported that 4 per cent upon the value new of the physical property at a valuation of \$3,000,000 or \$160,000 for the year 1919, was a proper and

sufficient amount to set aside as a reserve for depreciation.

9th. For this, that the Master found, as shown on page 19 of his report that the total expenses of the company for the year 1919 were \$1,204,262, and that its total revenue was \$908,258, showing that the company operated its property in the Houston telephone exchange for the year 1919 at a loss of \$306,204.

Whereas the Master should have found, decided and reported that the expenses of the plaintiff in operating the said Houston telephone exchange in the year 1919, after allowing the proper depreciation reserve, were not in excess of \$1,000,000,

and that many of the items making up such amount were excessive and that others should have been wholly disallowed and that the plaintiff company, not having disclosed all the revenues resulting from the operation of the said Houston exchange, that it was impossible to determine the amount of such revenues, and for that reason unable to determine what the net earnings of such plaintiff company was, for the year 1919, in the operation of its Houston exchange.

10th. For this, that the Master found, decided and reported, as shown on page 20 of his report, that anything less than 8 per cent return on plaintiff's property would be confiscatory.

Whereas, the Master should have found, reported and decided that a return of as much as 6 per cent. on the value of such property

would not be confiscatory.

11th. For this, that the Master found, as is shown on page-20 and 21 of his report, that the plaintiff company is not estopped by subdivision "E" of Sec. 1 of the Merger Ordinances of 1915, to make a claim for a fair return on its property, fixing the value thereof on any theory other than the cost thereof.

Whereas, as shown by the evidence, the Master should have found, decided and reported that the plaintiff company was so estopped by reason of the said subdivision of said merger ordinance from claiming a return on any value other than the original cost of its property.

12th. For this, that the Master found, reported and decided, as appears on pages 21 and 22 of his report, that the plaintiff company is entitled to be heard in a court of equity and to the relief sought therein.

Whereas the Master should have found, decided and reported, that, as shown by the evidence, the plaintiff company did not make such a full and complete disclosure in regard to its revenues and particularly in regard to the amount which would be deducted from the value of the property of the Houston telephone exchange on account of the additional use and service such property was put to by the plaintiff company in earning other revenues, to wit, its long distance tolls; and on account of the said plaintiff company failing to disclose the result of its financial dealings with the Western Electric Company and the profits resulting therefrom, involving the purchase by the plaintiff from The Western Electric Company of large amounts of property equipment and supplies, both the plaintiff and the said Western Electric Company, as appears from the

evidence, being owned by the same company to wit, The American Telegraph & Telephone Company, in the following manner, that is to say, that the said American Telegraph & Telephone Company owned practically all of the stock of both the plaintiff company and the said Western Electric Company and the Master should have further found that the said Plaintiff company was not entitled to relief in a court of equity because it made no effort to do equity and has not come into the court with clean hands.

13th. For this, that the Master found, decided and reported, as appears from pages 22 and 23 of his report that the rates fixed by the ordinance of 1909 applied under present conditions to prevent plaintiff from obtaining a fair return on the value of its property used and useful in rendering telephone service in the City of Houston, Texas, and that such rates are, therefore confiscatory and that the enforcement of said ordinance under such conditions should be enjoined.

Whereas, the Master should have reported that on account of the fact that the plaintiff company had not made a full and fair disclosure of its affairs and particularly had not shown that the telephone exchange of the City of Houston was credited with the proper and sufficient part of the toll earnings and no disclosure was made as to the extent to which the value of the property used by the plaintiff company in furnishing the telephone service in the City of Houston should be reduced on account of such additional service and use to which the said property was put in earning the toll revenues and further that it had not made a disclosure of the profits realized by the parent company, The American Telegraph & Telephone Company, which owns the plaintiff company in the manner above stated, on account of the purchases of the equipment and supplies from The Western Electric Company which is also cowned by the said American Telegraph & Telephone Company, in the the manner above quoted.

Wherefore the defendants except to the said report and ask the judgment of the court thereon.

W. J. HOWARD, Solicitor for the Defendants, City of Houston, et al.

Endorsements: In the District Court of the United States for the Southern District of Texas at Houston. The Southwestern Telegraph & Telephone Company vs. City of Houston et al. Equity No. 108. Defendants' Exceptions to Master's Report. Filed 17 day of June 1920. L. C. Masterson, clerk, by M. Anderson, deputy. 68

Opinion.

Filed Sept. 7, 1920.

In the District Court of the United States for the Southern District of Texas.

No. 108. In Equity.

SOUTHWESTERN TELEGRAPH & TELEPHONE COMPANY

VS.

CITY OF HOUSTON.

D. A. Frank, St. Louis, Missouri; Joseph D. Frank, Dallas, Texas; William H. Duls, Dallas, Texas; John Charles Harris, Houston, Texas; Solicitors for Plaintiff.

W. J. Howard, Houston, Texas; Kenneth Krahl, Houston, Texas; Solicitors for Defendant.

JACK, District Judge.

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Opinion.

In 1909, the City of Houston passed an ordinance fixing local telephone rates under which plaintiff company operated until 1915, when it acquired, by purchase and merger, the property of the Houston Home Telephone Company. The ordinance authorizing the merger, duly accepted by the plaintiff company, contained the following provision as to future increases in rates:

"The Southwestern Telegraph and Telephone Company agrees that it will not increase rates as at present charged by it for service in the City of Houston, unless it appears upon a satisfactory showing to be made before the City Council of the City of Houston, of all receipts and disbursements, and said showing must, in order to justify or warrant a raise in the rates, reasonable prove that there exists a necessity for an increase of charges in order that said Company may earn a fair return upon its capital actually invested in the Houston plant. And it is agreed for a term of five years from this date that a fair return upon said capital and investment is not less than seven nor more than eight per cent."

In December, 1917, plaintiff made application to the City Council for authority to put in effect a schedule of increased rates. Hearings were had, but no final action on the application was taken by the Council. In August, 1918, the Federal Government took control of all the properties of the defendant company, including the

Houston exchange, and continued to operate the same through the Postmaster General, who in February, 1919, adopted the proposed new schedule of rates. To avoid prosecutions under the old ordinance of 1909, the Telephone Company as agent for the Postmaster General, brought suit against the City, to enjoin it from seeking to enforce the old rates. This court granted the injunction, holding that the property being operated by the President through the Postmaster General, as a war measure, authorized by Congress, his right to increase rates could not be questioned by defendant. (256 Fed. 690).

On July 31, 1919, the United States returned its property to the Telephone Company and promptly thereafter the Mayor of the City notified the Company that, the injunction granted having become inoperative, the City would insist upon a return to the schedule of rates prescribed by the ordinance of 1909, whereupon plaintiff filed an amended and substituted bill, seeking an injunction on the allegations that the schedule of rates fixed by the ordinance of 1909 would not yield and had for several years past not yielded, revenue in excess of the operating expenses, and that such ordinance was confiscatory of its property and in violation of the Fourteenth Amendment of the Federal Constitution, forbidding the taking of property without due process of law. With instructions

to take the evidence and report his findings of fact and conclusions of law, the case was referred to Julian Llewellyn, Special Master who in a carefully prepared and well considered report, found that the ordinance was confiscatory and that its enforcement should be enjoined. The case is now before the Court on defendants' exceptions to the Master's report.

The consideration and effect to be given by the Court to the findings of fact by the Master in a case of this kind involving the public interest, is well expressed by Mr. Justice Moody in Knoxville Water Company vs. Knoxville 212 U. S. page 1.

"At the threshold of the consideration of the case, the attitude of this Court to the facts found below should be defined. Here are findings of fact by a Master, confirmed by the Court. The company contends that, under these circumstances, the findings are conclusive in this court, unless they are without support in the evidence, or were made under the influence of erroneous views of law. We need not stop to consider what the effect of such findings would be in an ordinary suit in equity. The purpose of this suit is to arrest the operation of a law on the ground that it is void and of no effect. happens that in this particular case, it is not an act of the legislature that is attacked, but an ordinance of a municipality. the function of rate-making is purely legislative in its character, and this is true whether it is exercised directly by the legislature itself, or by some subordinante or administrative body, to whom the power of fixing rates in detail has been delegated. The completed act derives its authority from the legislature, and must be regarded as an exercise of the legislative power. There can be at this day no doubt, on the one hand, that the courts, on constitutional grounds, may exercise the power of refusing to enforce legislation, nor, on

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the other hand, that the power ought to be exercised only in the clearest cases. The constitutional invalidity should be manifest, and where that invalidity rests upon disputed questions of fact, the invalidating facts must be proved to the satisfaction of the Court. In view of the character of the judicial power invoked in such cases, it is not tolerable that its exercise should rest securely upon the findings of a Master, even though they be confirmed by the trial Court. The power is best safe-guarded against abuse, by preserving to this Court complete freedom in dealing with the facts of each case. Nothing less than this is demanded by the respect due from the judicial to the legislative authority. It must not be understood that the findings of a Master, confirmed by the trial court, are without weight, or that they will not as a practical question, sometimes be regarded as conclusive. All that is intended to be said is, that in cases of this character this court will not fetter its discretion or judgment by any artificial rules as to the weight of the Master's findings, however useful and well settled these rules may be in ordinary litigation. We approach the discussion of the facts in this spirit."

The rule is well established that rate making bodies must allow such a rate to public service corporations, as will yield a fair return upon a reasonable value of its property used for the public. The total value of the property, the Master found to be, in round figures as follows: value of physical property \$5,000,000; going concern value, \$765,000; working capital \$238,000; total, \$6,003,000. The defendant excepted to this finding, claiming that the valuation should have been as follows: Physical property \$2,750,000; going concern value \$50,000; working capital \$100,000; total \$2,900,000.

Physical Property.

Under the general rule as stated by the Supreme Court in Wilcox v. Consolidated Gas Company, 212 U.S. 19, the value of the property is to be determined as at the time when the inquiry is made regarding the rates. If the property which legally enters into the consideration of the question of rates has increased in value since it was acquired, the company is entitled to the benefit of such increase. In the Minnesota Rate Case, 230 U.S. 352, the Court said:

"It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underw-ite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property and not the original cost of it, of which the owner may not be deprived without due process of law.

"The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable

judgment having its basis in a proper consideration of all relevant facts. The scope of the inquiry was thus broadly described in Smyth v. Ames (169 U. S. pp. 546, 547) 'In order to ascertain that value the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present, as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway, than the services rendered by it are reasonably worth."

With the high cost of labor and material, caused by the war, and which still prevails, the cost of reproduction of the plant, would be far in excess of the original cost. Taking into consideration the cost of reproduction, the original cost and these various elements which the courts have held should be included, the Master found the value of the physical property to be \$5,500,000, from which he deducted \$500,000 for depreciation, leaving a net valuation of \$5,000,000 whereas the actual cost of the property as shown by the company's books was \$4,571,567.

While, under the general rule, and in the absence of any agreement to the contrary, both the cost of reproduction, and the original ost, must be considered in fixing present value, the present case is acceptional in that by the terms of the ordinance permitting the plaintiff company to purchase a competing telephone exchange in Bouston, it is specifically provided that an increase of rates shall be remitted only when necessary to permit the company to earn a fair return—not upon the value of its property, but upon "its

capital actually invested in the Houston plant." Thus by
the terms of its contract with the City, the Telephone Company has specifically waived its right to claim anything more
han a fair return on its capital actually invested which is the actual

It is true, as held by the Master, that a municipal corporation under the constitution and laws of Texas may not bargain away its light to fix rates (San Antonio vs. Altgelt 200 U. S. 304) and it may be that it cannot bind itself by an agreement that the basis of uluation on which rates may be fixed shall be other than that which the courts have held to be the legal basis. Had the contract, evidenced by the ordinance and its acceptance, been attacked on this pound while yet executory, it may be that the courts would have unulled it for want of mutuality, but the contract is no longer necutory. It has been executed, the plaintiff company has long size taken over and absorbed the property of the competing company and it is now estopped from disavowing the agreement at the

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time made by it as a substantial part of the consideration for the City's consent to a merger of the two corporations. I therefore think that the Master erred in treating as of no effect this provision of the ordinance.

The physical value of the property on which plaintiff is entitled to receive a fair return is the value as shown by the books, \$4,517,567.

Going Concern Value.

In the Des Moines Gas Co. vs. City of Des Moines, 238 U. S. 165, the Supreme Court held:

"That there is an element of value in an assembled and established plant doing business and earning money, over one not thus advanced, is self-evident. This element of value is a property right and should be considered in determining the value of the property upon which the owner has a right to make a fair return when the same is privately owned although dedicated to the public use."

See also Denver vs. Denver Union Water Co. 246 U. S. 178.

The Master's inclusion of a going concern value under authority of these cases would have been proper—though I do not think it should have been fixed in excess of one-half of the amount named—had it not been for the plaintiff's agreement in accepting the merger ordinance that the sum on which it should receive a fair return should be the capital actually invested, which is equivalent to the actual cost of the plant plus the working capital. In the statements previously filed with the City of the valuation of its property,

it does not appear that any going concern value had been included, and it seems clear that none was contemplated in the merger ordinance.

Over a million dollars of the capital actually invested by plaintiff company, as shown by its books, on which it is entitled to receive a fair return, represents the price paid for the plant of the Houston Home Company, and as the latter was at the time a going concern, that price included its going concern value. If now the going concern value of the merged corporations be included in the sum on which a fair return is to be paid, it is evident that there would be twice included the going concern value of the Houston Home Company property.

The cost of creating such going concern value was paid as expenses of operation out of the revenues of the company, much of it since 1919. When the Council, in that year fixed the present schedule of rates, as to which no complaint was made by the company until December 1917, it must be preseumed that the Council gave full consideration to all operating expenses in determining a fair rate. Such expenses so paid out of the Company's revenues, cannot be said to be "capital actually invested" and should not be included in the total valuation on which plaintiff is entitled to receive a fair return.

Working Capital.

By working capital is meant the amount of cash and supplies necessary to be kept on hand, to meet current expenses and contingencies, as they may arise, in the proper conduct of the business. The Master allowed, on this item, \$238,000, being the proportion of the total estimated operating capital of the company at all of its exchanges in Texas allocated to Houston, as figured and estimated

by one of the plaintiff's witnesses.

The plaintiff renders bills in advance to its subscribers. Its average monthly expenditures are about \$80,000 so that if every subscriber were a month and a half late in settling his bill, a working capital of \$80,000 would ordinarily suffice. Making due allowance for emergencies and unforeseen expenses, I think that \$120,000 would be a liberal allowance for working capital and that the finding of the Master should be reduced from \$238,000 to that sum.

Income and Expenses.

There is no dispute as to the amount of plaintiff's revenue actually received at the Houston Exchange during 1919, nor is there any question as to the Referee's finding of the expenses paid out for the same period, though exception was taken to allowance of 6.33 per cent reserve for depreciation. The total revenues, less excess collected over the old rates while the property was operated by the Government, aggregated \$908,258, while the expenses including reserve for depreciation, totalled \$1,214,462, leaving a deficit of \$306,204.

Division of Long Distance Tolls.

It is contended by the defendant that the plaintiff who owns certail toll lines running out of Houston has not credited to the Houston exchange its just proportion of toll receipts for long distance messages. The proportion so credited is 25% on all long distance tolls collected in Houston, which the Master found was greater than that allowed any one of the eight independent exchanges in the State by independent long distance toll lines with which they connect; that the rate is the same as that allowed the Houston exchange by independent long distance lines running into Houston; and that the rate is larger than that paid by the Plaintiff company to over three hundred independent exchanges. Furthermore 25% to the exchange the Master found, is the customary allowance made by State Commissions throughout the country, and that it is not practical to segregate the cost of handling long distance messages as between local exchanges and long distance lines. The Court will sustain the division as the usual and customary one.

(See Cumberland Telephone & Telegraph Company vs. Louis-

ville, 187 Fed. 637.)

American Telephone & Telegraph Company.

Plaintiff's telephone supplies are purchased from the Western Electric Company practically all of whose stock is owned by the American Telephone & Telegraph Company, which likewise owns ninety-nine and a fraction per cent of the stock of plaintiff com-pany. The American Telephone & Telegraph Company has a contract with the plaintiff by which it furnishes certain telephone apparatus and renders certain service in accounting and laboratory work, for which it is paid four and one half per cent of plaintiff's gross operating revenues.

The amount paid for this service is claimed by plaintiff to be excessive as are likewise alleged to be the prices charged by the Western Electric Company. It is furthermore contended that such service by the American Telephone & Telegraph Company should be rendered at cost and that the evidence offered fails to show what was such actual cost. The Master, after careful

75 consideration of the mass of conflicting testimony, held against such contentions of the plaintiff and found that the plaintiff gets full value for the amount of money paid the parent company and unqualifiedly approved the four and one half per cent payment, which in 1919 aggregated \$43,528.00.

As to the nature of the service rendered, the Master quotes with approval from the Supreme Court of Michigan in the case of Detroit vs. Railroad Commission and State Telephone Company, started April 10, 1920, in which that Court quotes with approval the opinion of the Railroad Commission of Michigan as follows:

"The American Telephone and Telegraph Company itself a large corporation financed by the issuance of its own securities, and occupying the same relative position to telephone companies of several other states, is able with practicability, to and does maintain extensive laboratories and offices where careful experiments are constantly being made, designed to produce improvements and economies in It employs engineers, accountants auditors and others whose services are highly beneficial to telephone companies whose employment would be impossible to any of these associated com-panies, individually. The cost to any individual company of maintaining a staff of skilled assistants of like character and ability would be prohibitive; yet under this arrangement the Michigan State Telephone Company now has the benefit of all that these men do or produce in the way of improvements, refinements or economies in telephone facilities, service or methods of operation. True the results of the investigations and experiments of these men, once they are achieved may be given to many associated companies as readily as to one, but that does not lessen the value of them to anyone of the associated companies.

"The Michigan State Telephone Company's securities are taken and handled by the American Telephone and Telegraph Company at uniformly low interest rates and without large discounts. service is one, the value and importance of which it is impos-ible

to calculate

"The effect of this arrangement is that the State Company is given the benefit of the services of the most efficient engineers, accountants, traffic men, patent lawyers and others possible to secure. They are furnished with certain standard parts of all telephone sets, which are kept in repair for them. They are aided in their financial matters extensively. These are services which the Company needs, which are useful to is, inuring to the benefit of its patrons, which, if they could otherwise be had at all, certainly would not be obtained at any less cost than under their contract with the American Telephone & Telegraph Company. It is apparent that this contract should receive the approval of the Commission lows in the opinion of the Commission that unless the contracts between the Michigan State Telephone Company and the American Telephone & Telegraph Company under which certain facilities are furnished and certain engineering accounting and other services are rendered to the Michigan State Telephone Company and between the Michigan State Telephone Company and the Western Electric Company, under which the applicant company purchases certain of its supplies and materials, amount to a fraud upon the public by reason of the price paid by the Michigan State Telephone Company being excessive, then the disbursements of the Michigan State Telephone Company, in pursuance of these contracts, must be considered legitimate and proper charges upon its revenues. It was made to appear upon the hearing before the Commission by Mr. Burch that the prices and terms at which the Western Electric Company furnished property and facilities to the Michigan State Telephone Company were very favorable, that the facilities furnished by the Western Electric Company were a good standard, the world over, and furnish an excellent basis for fixing unit prices.'

The scope of the inquiry in this case cannot be extended to the determination of a fair rate of profit to the American Telephone & Telegraph Company on its capital invested, or to such a rate

of profit to the Western Electric Company which is not a public service corporation, but a private corporation engaged in the business of manufacturing telephone apparatus. The problem presented by the relations of such holding and subsidiary corporations are serious ones which vitally affect the public interest, but they are problems which primarilly call for legislative consideration.

The fact that the American Telephone & Telegraph Company dominates and controls both the plaintiff company and the Western Electric Company, is sufficient to cause the courts to very closely scrutinize any dealings between these corporations whereby any unjust advantage might be taken by the parent company, or the effect of which might be to enable it to receive a larger return than that which forms the basis of the established rate for telephone service to the public. Such corporations, however, are not debarred from entering into contracts with each other, and where such contracts are fair and advantageous to the subordinate corporation, they will be recognized and given effect.

Reserve for Depreciation.

The Plant's present condition, according to witnesses is 92% per-That is to say, with the replacements which have from time to time been made, there is only a general depreciation now existing The Company has not shown the actual amount paid out for replacements prior to 1909, when it first began a system of bookkeeping so as to show such costs. The realized depreciation for 1909 to 1917 is shown to have been only 4% of the book cost of the plant, but this does not cover replacements which will in the future have to be made such as central office equipment, buildings, underground cable, etc. During 1918 and 1919, while the property was being administered by the Government a reserve of 5.72% was allowed for depreciation. The usual amount of replacements were not actually made during Government control because of the war and the priority given to war industries. The 6.33% reserve allowed by the Master for depreciation would, I think, be too much if figured on the value of the plant, not including depreciation, as was done, but if the percentage be taken on the book value, which under the merger contract should govern, I think it would, under present conditions be a proper allowance.

Return on Capital Actually Invested.

The Master found that 8% under present conditions would be a fair return. In Lincoln Gas & Electric Company vs. City of Lincoln 250 U. S. 256, the Court said:

"It is a matter of common knowledge that owing principally to the World War, the cost of labor and supplies of every kind have greatly advanced since the ordinance was adopted, and largely since this case was last heard in the Court below. And it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants or similar public utilities a few years ago, furnishes no safe criterion for the present or for the future."

A return of 8% is, I think, under present conditions, a fair one if restricted as it should be to the capital actually invested.

Summarizing, the capital actually invested, on which plaintiff is entitled to receive a fair return is as follows:

Value of physical	property	\$4,571,567 	.00
Working capital			.00

\$4,691,567.00

It should receive on this a net return of 8% or \$375,325.00. Instead of receiving such income, under the Master's findings of revenues and expenses, it sustained a loss during the year 1919 of \$306,-

This includes an allowance of \$348,150.00 for depreciation, being 6.33% of \$5,500,000.00. Substituting for \$348,150.00, \$289,380.00 being the same percentage on the actual cost, would reduce the excess of expense over renenue to \$247,434.00, net loss It follows that the said ordinance of 1909 is confiscatory of plaintiff's property and in violation of the Fourteenth Amendment of the Federal Constitution, prohibiting the taking of one's property without due process of law. The Master's findings, except as otherwise stated are approved. A decree will be prepared and presented in accordance with the views herein expressed.

The findings of the Court on the questions of fact herein presented are intended as a guide to the City Council in enacting a new ordinance establishing a new schedule of rates. The Court's decision relates only to the present. A year hence conditions may so change as to warrant a further increase or a decrease in rates. will be without prejudice to either party should conditions hereafter justify, to petition the Court to rescind its injunction or to grant such relief as may be necessary or needful under such changed conditions, and to that end the Court will retain jurisdiction.

GEO. WHITFIELD JACK,

Judge.

Endorsements: No. 108. In Equity. United States District Court, Southern District of Texas. Southwestern Telegraph & Telephone Company vs. City of Houston. Opinion. Filed Sept. 7. 1920.L. C. Masterson, Clerk.

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Decree.

Filed September 18, 1920.

In the District Court of the United States for the Southern District of Texas, Houston Division.

In Equity.

No. 108.

SOUTHWESTERN BELL TELEPHONE COMPANY

THE CITY OF HOUSTON et al.

On the 20th day of July, 1920, this cause came on to be heard on the exceptions of defendants to the report of the Special Master, Julian Llewellyn, filed herein on the fifth day of June, A. D. 1920, and on the evidence and proofs in the case and the same were argued by counsel for complainant and defendants respectively.

Wherefore, upon consideration thereof, it is ordered, adjudged and decreed by the Court.

I.

That the ordinance passed by the City of Houston on or about the 22nd day of October, 1909, fixing rates to be charged by complainant Company for telephone service in the City of Houston is unjust and confiscatory and in violation of the Constitution and Laws of the United States, and that the prayer of the plaintiff Southwestern Bell Telephone Company for an injunction herein be granted, and that the defendants, the City of Houston, A. E. Amerman, Mayor; Dan M. Moody, H. A. Halverton, Matthew Drennan, David Fitzgerald, Kenneth Krahl, B. F. Louis and Searcy Baker, as officers of said City, their successors, agents and servants, and each of them, be and are hereby restrained and enjoined from enforcing said ordinance, which ordinance fixes rates to be charged by the complainant Company for telephone service within the City of Houston. and from interfering with plaintiff in charging and collecting such rates as will not produce more than a fair return upon its capital actually invested and said defendants are enjoined from imposing any of the penalties announced in said ordinance if the complainant should charge rates in excess of those prescribed by said ordinance.

II.

It is further ordered that the defendants and their successors in office, shall have the right, at any time, to apply to this court by a bill herein or otherwise as they may be advised for a further order or decree whenever it shall be made to appear that by reason of change in circumstances or conditions the rates prescribed by the ordinance above referred to are sufficient to yield plaintiff a fair return upon its capital actually invested, but this decree shall be without prejudice to the rights of the City of Houston to exercise its rate making power within the Constitutional limits.

III.

It is further ordered that the plaintiff herein and its successors and assigns shall have the right at any time to apply to this court by a bill filed herein or otherwise, as they may be advised, for a further order or decree whenever it shall be made to appear that any rate fixed by ordinance of the City of Houston is insufficient to yield plaintiff a fair return upon its capital actually invested.

IV.

It is further ordered and decreed that all costs incurred herein be left for future determination by the Court, there being a substantial difference between the parties as to how the same should be assessed.

GEO. WHITFIELD JACK,

Judge.

Approved as to form.

JOSEPH D. FRANK,

For Plaintiff.

W. J. HOWARD,

For Defendant.

Endorsements: No. 108. In Equity. Southwestern Bell Telephone Company vs. The City of Houston et al. Decree. In the District Court of the United States for the Southern District of Texas, Houston Division. Filed Sept. 18, 1920. L. C. Masterson, Clerk, by J. L. Sexton, Deputy.

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Petition for Appeal.

Filed Nov. 13, 1920.

In the District Court of the United States for the Southern District of Texas.

In Equity.

No. 108.

SOUTHWESTERN TELEGRAPH & TELEPHONE CO.

VS.

CITY OF HOUSTON.

The above named defendant, the City of Houston conceiving itself aggrieved by the final decree, order and judgment entered in the above entitled cause on the 18th day of September, 1920, hereby appeals from said decree, judgment and order to the Supreme Court of the United States, and it prays that its appeal be allowed and that a transcript of the record and proceedings and papers upon which said final decree order and judgment was made, duly authenticated, may be sent to the said Supreme Court of the United States.

And now at the time of filing this petition for appeal, the said City of Houston, appellant, files an Assignment of Errors setting up separately and particularly each error asserted and intended to be

urged in the Supreme Court of the United States.

And your petitioner will ever pray.

W. J. HOWARD,
N. C. ABBOTT,
Solicitors for Defendant.
City of Houston.

Endorsements: In the District Court of the United States for the Southern District of Texas at Houston. No. 108. In Equity. Southwestern Telegraph & Telephone Company vs. City of Houston et al. Petition for Appeal. Filed 13th day of Nov., 1920. L. C. Masterson, Clerk, by J. L. Sexton, Deputy.

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Assignments of Error.

Filed Nov. 13, 1920.

In the District Court of the United States for the Southern District of Texas.

In Equity.

No. 108.

SOUTHWESTERN TELEGRAPH & TELEPHONE CO.

VS.

CITY OF HOUSTON.

Comes now the City of Houston and files its Assignment of Errors, in the above entitled and numbered cause.

First Assignment of Error.

The Honorable District Court erred in holding and finding that the plaintiff Southwestern Telegraph & Telephone Company has invested in the Houston Exchange, as shown by its books, the sum of \$4,571,567.00, upon which it is entitled to earn a return, for the reason that the proof shows that in the said amount so shown by the books there was included a very considerable amount of property used exclusively in handling long distance calls, and further that the sum of \$700,000.00 was not being used and was not useful in rendering telephone service to the people in the City of Houston who were subscribers to such service.

Second Assignment of Error.

The Honorable District Court erred in sustaining, against defendant's exception No. 6 thereto, the report of the Special Master, approving the division of the receipts derived from the long distance calls originating in the exchange of the City of Houston, whereby only twenty five per cent of such receipts were credited to the local Houston Exchange and added to its receipts, for the reason that the proof showed that such twenty-five per cent would not pay the expense incurred by the said Exchange in the City of Houston in handling such long distance calls, and the plaintiff which owas both the local exchange and the long distance lines, both of which were engaged in handling such long distance calls made no attempt to show to what extent the local exchange property was valuable in handling such long distance calls and to what extent it should participate in the profits derived from handling such long distance calls.

Third Assignment of Error.

The Honorable District Court erred in overruling defend-89 ant's exception No. 7 to the Special Master's Report, and in approving the report of the Master that the 41/2 % of the gross revenues of the Houston Exchange, paid to the American Telephone & Telegraph Company, under what is known as the A. T. & T. License Service Contract, whereby the American Telephone & Telegraph Company collects from the exchange in the City of Houston 41/2% of its gross earnings in payment, as claimed by the American Telephone & Telegraph Company for certain instruments furnished and certain service claimed to be rendered such Houston Exchange under said contract was a legitimate operating expense to be deducted from the earnings of the local Houston Exchange, because the proof showed that the American Telephone & Telegraph Company owns ninety nine and a fraction per cent of the stock of the plaintiff, the Southwestern Telegraph & Telephone Company, which operates the Houston Exchange and only the cost of such service should be deducted from the revenues and charged to the expense of operation. and there was no attempt made by the plaintiff to show the cost or rental value of the instruments furnished, or the cost of the service claimed to have been rendered the Houston Exchange.

Fourth Assignment of Error.

The Honorable District Court erred in approving against defendant's Exception No. 8 that the allowance was excessive, the report of the Special Master, allowing the plaintiff as a reserve for depreciation a rate of 6.33% on \$4,571,567.00, the value of the property as found by the court, for the reason that such a rate is excessive, the weight of the evidence showing that \$4.00 per station or 4% annual annuity was sufficient to create a proper reserve for depreciation.

Fifth Assignment of Error.

The Honorable District Court erred in overruling defendant's Special Exception No. 10 to the Special Master's Report, and in approving such report and finding of the Master, that the plaintiff should receive a return of 8% upon its capital invested in the exchange in the City of Houston, and that any rate of return less than that would be confiscatory, for the reason that such rate of 8% is much in excess of the legal rate, which is 6% as fixed by the Statutes in the State of Texas, and as disclosed by the proof is much in excess of the generally prevailing conventional rate on well secured loans in the community, and much in excess of a rate that could be deemed confiscatory within the meaning of the Fourteenth Amendment to the Constitution of the United States.

Sixth Assignment of Error.

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The Honorable District Court erred in overruling defendant's exception No. 12 to the Special Master's report, and in not holding that the plaintiff had failed to do equity and had no standing in a court

of equity, and in failing to dismiss plaintiff's bill for want of equity for the reason, that it appears from the proof and from the findings of the Master, and the findings of the Trial Court that the American Telephone & Telegraph Company owns practically all of the stock in the plaintiff's company, namely the Southwestern Telegraph & Telephone Company which operates the local exchange in the City of Houston, and also practically all of the stock of the Western Electric Company which manufactures the greater part of the supplies and equipment that are used in the extension and the operation of said local exchange, and the plaintiff made no full or fair disclosure as to the prices charged and the profits realized by the Western Electric Company upon the supplies and equipment so furnished to such local exchange, and upon which prices the rate of return to plaintiff is sought to be based, but it was affirmatively shown from the evidence that the said Western Electric Company on the supplies and equipment furnished the Houston Exchange charged excessive and exorbitant prices, upon which prices it is basing the rate of return on its property to be collected from the subscribers to the service furnished by said exchange to the people of the City of Houston.

Seventh Assignment of Error.

The Honorable District Court erred in not holding that the plaintiff had no standing in a court of equity and in failing to dismiss plaintiff's bill, for want of equity, because it appears from the evidence that the plaintiff owns not only the local telephone exchange in the City of Houston, but also the long distance lines connecting with such exchange and that all the expense of handling the long distance calls is charged to the local exchange, including its operating expense, and that large sums are received as tolls for long distance calls, which are handled by both the local exchange and the long distance lines and no attempt was made by the plaintiff to effect a division of such receipts between the local exchange and the long distance lines in any fair or equitable manner based upon the amount

invested by each, or the services performed by each, or upon any other basis with a view of accuracy, but the plaintiff merely arbitrarily apportioned to the said local exchange only 25% of the receipts for outgoing calls.

Eighth Assignment of Error.

The Honorable District Court erred in not dismissing plaintiff's bill for want of equity, it appearing that the American Telegraph & Telephone Company which owns practically all of the stock of the plaintiff company which operates the local Houston Exchange, arbitrarily deducts from the earnings of the local exchange $4\frac{1}{2}\%$ of its gross earnings, without attempting to show what it costs to supply the service for which the $4\frac{1}{2}\%$ is taken, and it further appearing that the plaintiff, which under the domination of the American Telephone & Telegraph Company, pays to the Western Electric Company practically all of the stock of which is owned by the American

Telephone & Telegraph Company, 4% on all purchases of supplies and equipment, purchased by the local exchange without attempting to show what the cost of such purchasing agency is, thereby making it impossible to determine the revenues and expenses of the local Houston Exchange.

Ninth Assignment of Error.

The Honorable District Court erred in holding that the ordinances of the City of Houston, prescribing the rates that could be charged for telephone service in the City of Houston were confiscatory and violated the Fourteenth Amendment to the Constitution of the United States, and in rendering judgment enjoining the defendant from enforcing such ordinances, because it was impossible to determine from the evidence what the revenues received by the plaintiff from the operation of the Houston Exchange were or what the expenses incurred in the operation of such exchange were.

Wherefore, the defendant, the City of Houston, prays that said order, judgment and decree of the District Court of the United States for the Southern District of Texas, be reversed.

W. J. HOWARD, N. C. ABBOTT, Solicitors for Defendant the City of Houston.

Endorsements: In the District Court of the United States for the Southern District of Texas, at Houston.—Southwestern Telegraph & Telephone Co. vs. City of Houston et al.—No. 108 in Equity.—Assignments of Error.—Filed 13 day of Nov., 1920. L. C. Masterson, Clerk, by J. L. Sexton, Deputy.

35

Order Granting Petition for Appeal.

Filed Nov. 17, 1920.

In the District Court of the United States for the Southern District of Texas, at Houston.

In Equity.

No. 108.

SOUTHERN TELEGRAPH & TELEPHONE COMPANY

VS.

CITY OF HOUSTON et al.

On this 15th day of November 1920, there having been presented to me the petition of the defendant the City of Houston for an appeal to the Supreme Court of the United States filed in the above

entitled and numbered cause on November 13th 1920, whereby the said defendant City of Houston petitions to appeal from the judgment and decree entered in said cause on the 18th day of September 1920 and the said petition having been fully considered by me, it is ordered that the said appeal be and the same is hereby allowed as prayed and it appearing that the defendant City of Houston is a municipal corporation, no appeal bond is required on said appeal.

GEO. WHITFIELD JACK.

U. S. Judge, Sitting in the District Court of the United States for the Southern District of Texas, at Houston.

Endorsements: No. 108. In Equity. In the District Court of the United States for the Southern District of Texas at Houston. Southwestern Telegraph & Telephone Company vs. City of Houston et al. Order granting petition for appeal. Filed 17 day of Nov. 1920. L. C. Masterson, clerk, by J. L. Sexton, deputy.

86 UNITED STATES OF AMERICA, 88:

The President of the United States to Southwestern Bell Telephone Company, and Messrs. J. D. Frank, W. H. Duls and John Charles Harris, solicitors of record, Greeting:

You are hereby cited and admonished to be and appear at a term of the Supreme Court of the United States at Washington, according to law, within thirty days from the date of this writ, pursuant to an order allowing an appeal filed in the Clerk's office of the District Court of the United States for the Southern District of Texas, wherein The City of Houston is Appellant, and Southwestern Bell Telephone Company, Appellees, to show cause, if any there be, why the decree in said cause mentioned, should not be corrected, and speedy justice should not be done to the parties in that behalf.

Witness, the Honorable Edward D. White, Chief Justice of the United States, this 15 day of November, A. D. 1920, and of the independence of the United States the 145th year.

[Seal of United States District Court, Southern District of Texas.]

GEO. WHITFIELD JACK, United States District Judge.

[Endorsed:] Please endorse waiver of service on this original. United States District Court, Southern District of Texas. No. 108, Equity Docket. Southwestern Bell Telephone Company vs. City of Houston, et al. Citation on Appeal to Supreme Court of the United States. Issued 15 day of Nov. 1920. I. C. Masterson, clerk, by J. L. Sexton, deputy. Returned and filed 23rd day of November 1920. L. C. Masterson, clerk, by J. L. Sexton, deputy.

Receipt of copy of this citation is hereby acknowledged and service thereof waived.

J. D. FRANK, Solicitor.

November 20, 1920.

87 Testimony in Support of First Assignment of Error, Relating to Cost of Property.

Mr. A. E. Scott, a witness for the Plaintiff, was duly sworn and testified as follows:

Direct examination.

Questions by Mr. J. D. Frank:

My name is A. E. Scott, and I live at St. Louis, Missouri. I am one of the statisticians of the Southwestern Bell Telephone Company,—Southwestern Bell Telephone System. I have been connected with the Southwestern Bell Telephone System for seven years, having been in the accounting department all of that time Prior to that time I had had about eleven years' accounting experience.

In 1900 I went with the Spague Electric Company, which is a branch of the General Electric Company, that is a branch of the General Electric Company, at Watsessing, N. J. I was employed there for three years in the cost department, preparing estimates of the cost of articles that were manufactured there. This was a manufacturing plant, and I prepared the estimates of the cost, and also prepared a record of the cost of the articles manufactures there. I went in there as stenographer, but I was there as stenographer only a short time and then worked into the clerical end of it. After spending three years there I went with the Thompson Machine Co. of Bellville, N. J., and did the same kind of work there, and in

addition did some part of the general bookkeeping work. I 88 was only there two years, and then went to Brooklyn, New York as office manager and general bookkeeper for the Brooklyn Builders' Supply Co. I did all classes of clerical work and general accounting and bookkeeping with the Brooklyn Builders' Supply Co. I worked for them six years. After that I left Brooklyn N. Y. and came to St. Louis. For about seven months I sold a line through Missouri, traveling salesman, and did some auditing and various clerical work for a few months, until November 1st, 1912, and at that time I came with the telephone company. 1912 I began working in what we call the Disbursements Department of the Accounting Department. My duties were of a very minor nature at first. I prepared bills, compiled summaries of expenses. I stepped out of that in a very short time into what they call the Voucher Clerk Job. I had charge of the voucher books and did all the posting, and prepared all the vouchers issued by the disbursements division for the payment of bills. I was on that about

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two years, and from that I was promoted to be general bookkeeper for one of the companies at St. Louis.

Q. One of the telephone companies?

A. Yes, sir.
Q. What company was that?
A. What was known then as the Bell Telephone Company of Mis-They operated in the eastern part of the State.

Q. You had charge of all their bookkeeping?

A. Yes, sir, or all of the books.

Q. Did you have any men working under you?

A. Yes, sir, from twelve to fifteen people working under me. Q. That is, accountants?

A. Yes, sir.

Q. All right, go ahead. A. After being on that until December, 1916, this Bell Telephone Company of Missouri was consolidated with what was known as the Missouri & Kansas Telephone Co. That re-ulted in my position being abolished, because the general bookkeeper of the Missouri & Kansas Company took over the duties I had. I then did general work of a special nature through the department, and made audits until May, 1918, and in May, 1918, I was appointed to the position of Supervisor of Accounting Methods. I had full charge of all the accounts, -accounting methods in the System, through the field and also in the general offices, establishing systems and seeing that it was followed out. I was on that until the spring of this year, in May, when Mr. Benzel, who has been Statistician, was promoted to be General Manager in Kansas, and at that time I took over his duties as Statistician.

Q. In all, how many years' experience have you had in the ac-

counting line?

A. About eighteen years altogether.

Q. What is the Southwestern Bell Telephone System, is that a cor-

poration?

A. No, sir, that is a name. It is a group which operates through the states of Missouri, Kansas, Arkansas, Oklahoma and Texas, and a small part of Illinois.

Q. Group of Telephone companies?

Yes, sir. 90

Q. Just name the various companies constituting the

Southwestern Bell Telephone System?

A. The Southwestern Bell Telephone Company of Missouri is operated in Missouri, Kansas and Arkansas. The Southwestern Bell Telephone Co. of Illinois is operated in the Western part of Illinois in three towns; it is a very small company. The Southwestern Bell Telephone Co. of Oklahoma is operated in the state of Oklahoma, and the Southwestern Telegraph & Telephone Co., that is a New York corporation which operates in the State of Texas.

Q. The Southwestern Telegraph & Telephone Co. is the Company

which operates in state of Texas?

A. Yes, sir.

Q. And that is the Telephone company which owns and operates the telephone exchange in the City of Houston?

A. Yes, sir.

Q. All of these companies named by you constitute what is known as the Southwestern Bell Telephone System?

A. Yes, sir.

Q. And the Southwestern Telegraph and Telephone Company is a part of that system?

A. Yes, sir; that is right.

Q. Mr. Scott, are you familiar with, and have you access to the books of the Southwestern Telegraph & Telephone Company?

A. Yes, sir. I have access to all of their records and accounts.

Q. Mr. Scott, have you prepared from the records of the Company a statement of the total cost of the property constituting the Houston telephone plant?

A. Yes, sir, I have.

Mr. Frank: We desire to offer that in evidence as Plaintiff's Exhibit No. 10.

(See page 66.)

92 Q. This is total cost, as shown by the books, is it? A. Yes, sir.

Q. Now, you testified that this company was organized in 1883. I notice that your statement begins from the year 1901. Explain to us why you haven't gone back to the year 1883, or whatever year it was the company began operating in Houston, 1887 or 1888?

A. Prior to 1901 no records of the cost of property were kept by exchanges. We kept the total cost of the property for the company as a whole, but in 1901 it was decided by someone that it was desirable to have cost by exchanges, and this amount of \$318,367.54 shows as the amount for Houston, it was the amount by apportioning. They had no cost prior to that time by exchanges.

Q. And the amount of property in Houston, according to that ap-

portionment, in 1901, was \$318,367.54, was it?

A. Yes, sir.

Q. Then, subsequent to that time your books show, do they, what was the cost of the physical property?

A. Since that time the effort has been made to keep the cost of

property by exchanges.

Q. In the last column you show the number of stations, do you mean by that the number of telephone stations in the city of Houston, for each of these years from 1901 down to the present time?

A. Yes, sir, that is what we call "company owned stations."

Q. Has the increase in the number of stations kept pace with the increase in the cost of new stations here?

A. Yes, sir; I think they are quite in proportion.

Q. What does your statement show, Mr. Scott, as to the date upon which this statement was prepared?

93 A. It shows that on September 30th, that is the date we have, 1919, that the cost of the property at Houston, accounted to \$4,810,385.40.

Q. Does that figure, Mr. Scott, include anything for that part of the valuation of the plant known as-that part of the cost known as the "going concern"?

A. No, sir, it does not.

Q. It does not show anything of that kind?

A. No, sir.

Q. Now, you have a statement here of the Intangible Capital,

\$754,979.80. Explain to us what that is.

A. That probably requires a little explanation. A great many companies which are capitalized-over-capitalized, and have water in their stock, or for other reasons have an item of intangible capital, or good will, or various names which have no real intrinsic value behind it, and does not represent anything, but simply an amount necessary to balance the capital issue with the assets of the company. This item "intangible capital" here is an entirely different thing; this actually cost us money, and got on to our books in connection with the Houston Home Telephone Co. property. The statement in the lower part shows how we got this figure. We purchased the Houston Home Telephone Company in September, 1915, and we paid \$1,359,740.94 for it. We find from our records that there are still properties of the old Houston Home Telephone Co. in service amounting to \$468,145.50. That leaves a balance of \$891,595.84.

Considerable of the property which we acquired in 1915 was taken down and some of it has been sold and some of it has been junked. We have secured salvage, or obtained in sale prices an allowance or credit of \$136,616.04, leaving a balance of \$754,979.80, intangible capital which actually cost us money here

Q. Actually paid out that money for the property? A. It represents an actual expense to the company.

Q. Mr. Scott, do you have any particular rules with reference to your system of accounting?

A. Yes, sir, we operate under the rules of the Interstate Commerce Commission, and have done so since January 1st, 1913.

Q. That is under the Federal Act requiring you to keep your books in accordance with the provisions of the Interstate Commerce Commission?

A. Yes, sir. Q. Have you a copy of the rules prescribed by the Interstate Commerce Commission?

A. Yes, sir.

Mr. Frank: We desire to offer that in evidence as Plaintiff's Exhibit No. 11.

(The document was thereupon received in evidence, and marked Plaintiff's Exhibit No. 11, as requested.)

Q. Mr. Scott, does the Interstate Commerce Commission make any rules with reference to your accounting and handling of transactions of this kind where you have purchased property?

A. Yes, sir.

95 Q. Will you explain that to us?
A. Yes, sir. I think I can explain it better by reading their instructions. Page 33, Section 13, as follows:

"13. Plant and equipment and other property purchased.-When any property in the form of a going or completed plant is purchased, an appraisal of the property so acquired should be made, and the different constituent elements of the plant (and equipment, if any) or other property acquired should be appraised at their structural value; that is to say, at the estimated cost of replacement or reproduction less depreciation to the then existing conditions through wear and tear, obsolenscence and inadequancy. If the qctual money value of the consideration given for the plant or other property was at the time of the acquisition in excess of such appraised value, the excess should be charged to account No. 204, "Other Intangible Capital," and the appraised values of the cons-ituent elements should be charged to the appropriate fixed capital accounts as hereinafter designated. If the actual money value of the consideration given was not in excess of such appraised value, such actual money value should be distributed through the said accounts in proportion to the said appraised value of the constituent elements approximate to the respective accounts. Companies should be prepared to furnish the Commission, upon a demand, a full report of the contract of acquisition, the consideration given therefor, the determination of the actual money value of such consideration if other than money the appraisal, and the amounts charged to the respective accounts for each plant or other such fixed capital purchased.

96 purchaser is required to procure in connection with the acquisition of any such plant or other fixed capital all existing records, memoranda, and accounts in the possession or control of the grantor relating to the construction and improvement of such plant, and to preserve such records, memoranda, and accounts until authorized by law to destroy or otherwise dispose of them."

Q. You followed those rules of the Interstate Commerce Commission in connection with this transaction?

A. Yes, sir.

Q. Mr. Scott, at the bottom of this statement I notice a statement like this: "Book figures do not measure present value or even

original cost." What do you mean by that?

A. In the first place, as I stated before, we did not have the original cost to start with. We made an estimate in 1901 that may have been correct, it may have been too high, and may have been too low. So to start with, we haven't got the original cost. Then we were not keeping our accounts from 1901 up to 1913 under the rules of the Interstate Commerce Commission. We had kept a system from 1910 which was practically the same as the Interstate Commerce Commission installed, but up to that time we had kept a system which was considerably different from the Interstate Commerce Commission, and under which many items which are now capitalized were not capitalized.

Q. Will you mention some of those items which they require you to capitalize which you were not capitalizing prior to that time?

A. I have in mind the "interest during construction." That 97 is one of the items not capitalized. "Engineering Expenses" which was all charged to maintenance in those times. Supervision" was charged to expense and not capitalized, and a small part of the general expense. So there is a considerable amount of cost which under our present accounting would be included in the book cost of our property if we had operated under the Interstate Commerce Commission, rules at that time.

Q. Mr. Scott, can you exercise your own pleasure as to whether

or not you follow this system of accounting, or not?

A. We have no discretion. There is a penalty not to comply with the instructions.

Q. That is under the Federal Law? A. Yes, sir.

Cross-examination.

(Questions by Mr. Howard:)

Q. You speak of this Home Telephone Company. In Exhibit 10 you show you paid \$1,300,000 for that, in round numbers?

A. Yes, sir.

Q. And you have of it in use something like \$400,000?

A. \$468,000.

Q. Leaving a balance of some \$800,000?

A. Yes, sir.

Q. And you salvaged something over \$100,000 out of that, leaving a balance of \$700,000?

A. \$754,000.

Q. The only benefit the people of this community got out of 98 that \$754,000 was the fact that a competing telephone line was eliminated?

A. The only benefit—I think that is rather a large benefit. Q. That is the only benefit they get out of it. That represents in the set up of your company, it represents the elimination of a com-

petitor?

A. I am not showing that. I am showing what the property cost. This represents a new figure on our books. It is carried under "Intangible Capital" because not represented by physical property, and does represent an actual money expenditure.

Q. It means that in the purchase of this property the Southwestern Telegraph & Telephone Company paid more than the physical

property was worth by \$745,000?

A. Not more than the properties were worth, but more than they were appraised at at the time of the purchase.

Q. That is supposed to be the worth. The appraisal was for the purpose of fixing value?

A. To fix their value at the time of the purchase.

Q. This amount that is now in service is fixed by the companyvalued by the company at something over \$400,000?

A. Yes, sir.

Q. The salvage is a matter of accurate and definite determination?

A. Yes, sir, we got so much for it.

Q. And adding those two items represents the tangible benefit

derived from that investment, does it not?

A. That represents the physical property which is still in the account, and the amount of salvage which we have obtained from the property taken down. 99

Q. And the other is just nothing-nothing to the other unless it is eliminating a competitor, nothing else on earth

it can be assigned to in your set up?

A. It is for physical property. We have to carry it as Intangible Capital, but it did represent an actual expenditure.

Q. Something spent?

A. Yes, sir, for which we didn't get physical property.

Q. You mean money spent for something, and it is impossible to say what it was spent for?

A. No, sir, I would not say that.

Q. What would you say?

A. Money which we spent which was not for physical property, and could not be included in our plant account according to the in-

structions of the Interstate Commerce Commission.

Q. Then, the only reason on earth why that is set up now as an asset of the company, and carried on the books of the company is because of some rule promulgated by the Interstate Commerce Commission saying that where it appeared there was an item like that that could not be accounted for, it should be carried under the head "Intangible?"

A. It could be accounted for. I have quite definitely accounted

for it.

Q. It is accounted for. You accounted for it by showing it is the difference between the amount of money they paid and the amount of physical property they got?

A. Yes, sir.

Q. That is the way?

A. Yes, sir.
Q. And you charged it up as an asset and something to be 100 added to the capital used in this exchange, and for the users of the telephone company to pay a rate on?

A. I am simply showing here what the books show, and as to what

the property at Houston cost.

Q. You supervise the keeping of the books, and the items that

are to be carried?

A. Yes, sir. I wouldn't have any lee-way as to how I would show this, because this is the way it has to be shown in accordance with the rules of the Interstate Commerce Commission.

Q. You are not authorized to charge it off as something that does

not really exist?

A. It is being charged off-it can be charged off, being part of the expense, and it can be amortized from year to year. We are amortizing our capital-

Q. What do you mean by that?
A. To charge off a proportionate part each year until such time as the amount will be wiped out.

Q. Absorbing it?

A. Yes, sir.
Q. Instead of paying it off at one fell swoop, it would be too burdensome, and you try to lessen the load from year to year and pay it off that way?

A. Yes, sir.

Q. These cost items you set up-in what exhibit is that, Mr. Scott the cost of the property by years?

A. That is Exhibit No. 10.

Q. And you get a valuation of \$4,810,385.40, the book 101 value of the property, as of September 30th, 1919?

Q. Now, Mr. Scott, do your book accounts show the cost of any telephone equipment or telephone equipment in Houston, which is

used for toll business?

A. Yes, we keep the accounts by exchanges and make no separation of the Central office equipment at a town as between what is toll central office equipment and exchange central office equipment. The toll equipment would be included in my figures, in this Exhibit No. 10, that is simply the toll central office equipment.

Q. That matter is taken care of by the engineers in making their

appraisal of the exchange?

A. Yes, the central office is not divided, central office equipment, as between exchange and toll.

Q. Any toll lines included in these book figures here?

A. No, sir, there are no toll lines included in that. They are reported as toll and are carried in our toll accounts.

Q. That is purely then-

A. (Interrupting.) This is purely exchange property with the exception of the toll central office equipment.

Q. Mr. Scott, your books since 1901 simply show the net additions

to property, do they not?

A. Yes, sir.

Q. Then you don't show on your books there the cost of any replacements, it is just simply the net additions to the plant from year to year?

A. The net results of additions and removals. 102

Q. In other words, if say in 1912, you had two million dollars' worth of property here in Houston and you removed one million dollars' worth of that property and you added two million more, what would your books show them with reference to the cost of this property?

A. It would show that we had added one million dollars to the

property.

Q. It would show that you had added one million dollars?

A. Yes, sir.

Q. And do not reflect the replacements which have been made from year to year?

A. That is right.

Q. Counsel has asked you concerning this cost of the property as shown by the books for the year 1901. What is the amount?

A. \$318.367.54.

Q. And what do your books show with reference to the total cost of this property?

A. \$4.810.385.40.

Q. Now, you don't know whether that first figure there is correct or not, you are just simply taking the books as they exist?

A. Yes, sir.

Q. You don't know whether that first figure there is correct or

A. No, we do not know that it is absolutely correct.

Q. You merely know that that is what is shown by the books? A. That is right.

Q. Mr. Scott, what per cent, of this \$4,810,385.40 does this \$418,367.54 represent?

A. Less than 7% of the total property.

Q. Less than 7% of the total property?

A. Yes, sir.

Q. Then as to the rest of it, that is, the other 93%, your books have been kept so as to show those net additions each year?

A. Yes, sir.

Q. And other than the fact that you have not included certain items which should have been included as a part of capital expenditures there, these books are fairly accurate?

A. Yes, I think so.

Q. Now, counsel has asked you concerning the price which was paid for this property of the Houston Home Telephone Company. These figures which you have on your book here merely reflect that part of the cost of that property which is known as bare physical plant, do they not?

A. Yes, sir, that is included in the physical property.

Q. Those books do not show anything with reference to that part of the plant of the Houston Home Telephone Company when it was in existence, which would come under the heading of "Going Concern Value?"

A. No, sir.

Q. It is just simply the bare bones of the plant which have been put on?

A. Yes, sir.
Q. Now, Mr. Scott, counsel has asked you about this \$754,979.80 and says that represents money which you have paid out for nothing.

or something to that effect. Wasn't that the appraised value 104 of that property at the time it was purchased, that is, the entire purchase amount there, \$1,359,000 in round numbers, that is what that property was appraised at at the time of its purchase, was it not?

A. Well, the entire property was appraised at that, but the physical property was not appraised at that.

Q. That is the entire property?

A. Yes, sir.

Q. Those books do not show any allowance for engineering and the various items that enter into the valuation of a telephone plant, do they? You hav-n't any such item as that included in your books there?

A. Well, the physical property was appraised by the engineers or rather some of them on the basis of what it was worth at that time. That may include engineering, or it may not. I am not familiar with the appraisal, how it was taken. A part of this money was paid to the City of Houston, was it not?

A. I understand there was an amount of some \$80,000, which was

paid to the City of Houston.

Q. Which was paid to the City of Houston for a certain interest which it claimed in this property?

A. Yes, sir, I understand it so.

Q. And that is part of that \$750,000 here, is it not?

A. Yes, sir.

Q. That is not shown on the books, is it?

A. No, sir, that is the only place it shows, is in the \$754,000.00.

105 LAMAR LYNDON, a witness for the Defendant after being sworn testified as follows:

Direct examination.

Questions by Mr. Howard:

I have been sworn in this hearing. My occupation is that of a Consulting Engineer. My training to fit me for engineering work has been that I spent nearly eight years in technical schools, the University of Georgia, Stephens Institute of Technology and Cornell University. I have a degree of Bachelor of Engineering from the University of Georgia, which is a Civil Engineering degree. I pursued special courses at Stephens Institute and Cornell, and I have no degree from either of those colleges. I have an engineering degree from the University of Georgia.

I am a member of the American Society of Civil Engineers, and I am a Fellow of the American Institute of Electrical Engineers. The two are prominent bodies of experts, engineers and scientists who are in the particular lines of work that are generally classified under civil engineering in the one case, and electrical engineering in the other, and are the recognized bodies in the United States and

likewise abroad of men skilled in those arts.

Q. Mr. Lyndon, in either or both of these societies is there any system of discrimination, or rather, of exclusiveness. I don't mean exclusiveness as it might prevail in some of your Eastern clubs, where personal geniality and your amount of money that you might have might determine your membership,

but where it is determined from the standpoint of scientists?

A. Well there are degrees of membership in both of these bodies. There are four in the American Society of Civil Engineers, and there are—I am not sure that I remember them exactly, but I believe, Junior members, Associates, Associate Members, and Mem-

bers, being of course the final and highest stage possible in the as-

sociation.

This is the American Society of Civil Engineers; I am a member. Then in the American Institute of Electrical Engineers there are likewise four orders of membership of which, if I remember, correctly, they are Junior, Associate Members and Fellows. I am a Fellow in the Institute; that's the highest branch in that Society.

I have been engaged to some extent in scientific research and pursuits; I have written books, papers and made contributions to standard works in that regard. 'My work on the storage battery entitled "Storage Battery Engineering" is the standard work upon that subject in the English language, and is in the use of the United States Army, the United States Navy, The War College and several colleges, and Universities.

I testified here some time ago in what was known as the Street Railway Company Hearing. That Company set the precedent of exhibiting some of the books of some of the witnesses that testi-

fied in behalf of the company. I have the book just referred

to in the collection here. This is the English edition and 107 it has been translated into the French language in this copy. (Referring to books.) One is English and the other a French translation. I have never known of an English work translated into the French language other than this one. It is quite possible, but have never known of one. I regard it as some considerable compliment to my work that it was translated into French. I don't know personally how it is looked upon by the French people and French scientists, but I understand that it is favorably regarded. certainly read it in French. It is written as a practical reference book for engineers, but has been adopted as a text book by several s-hools and colleges. I do not know whether it is used to any great extent as a reference work by engineers in actual practice; I see it in the libraries whenever I visit them and suppose they bought it for a purpose. I mean that it is in the libraries of nearly all well equipped engineers.

Q. Do you know in what colleges, if any, this work is used?

Mr. D. A. Frank: I don't see what difference it makes. He says it has been translated into French and is used by a great many colleges. There is not any dispute about it because it is a book on storage batteries and is not relevent to telephony.

Mr. Howard: Storage batteries have some connection with tele-

phony.

Mr. D. A. Frank: Why, they have some connection.

Mr. Howard: Are you questioning at all the ability of this wit-

ness?
Mr. D. A. Frank: Oh, absolutely. I don't think his ability is shown by the number of schools that have adopted his book.

(By Mr. Howard:)

Q. Do you know, briefly, Mr. Lyndon, what colleges if any, this book is used by?

A. No. I have been told by the publishers from time to time -

Mr. D. A. Frank: I object to it as hearsay. The Master: Tge objection is sustained.

A. I do. Mr. Kelsey reminded me it was used in Perdue, and at one time I know the publishers informed me it was being used by twelve different colleges. I think—that included the United States War College. I happen to know of that.

(By Mr. Howard:)

Q. Does this book deal exclusively with storage batteries? Or does

it cover other subjects?

A. Well it deals with a large number of branches of electrical engineering, to which branches storage batteries are, or may be allied. It even goes into alternating current theories and electrical-magnetic theories, and is very mucy broader in its scope than its title as a storage battery work would indicate.

I have written other books and made other scientific contributions; I have written a work in two volumes on Hydro-Electric power. That is a work which speaks on the development of water powers, the conversion of the energy from hydro-development to electrical energy, power station equipment, long-distance transmission and the general theory of electric service computations, and

transmission lines.

Those are all the books on that subject; these are the 109 volumes and I am the author of the books. I know that the work was selected after consideration of all others on that subject by Armour Institute, and I understand, that one of the colleges here in Texas, the one that Dr. Nagle is President of, I believe the Agricultural and Mechanical College, that I am not sure of, but I understand it is used there, and the publishers have informed me that three or four colleges had adopted it. It is a comparatively The reviews of the work in all technical and scientific new work. journals were very satisfactory and in the English Review, Mr. Kilbourn Scott, reviewing this for the London Electrician was sufficiently pleased with it to write me a personal note about it, which is a bit unusual. Its sales could indicate that it is a well received The United States Government established an over seas technical library, in which it selected one hundred works on all scientific subjects; electricity, hydroulics, chemistry and every other scientific subject and selected one hundred books out of the entire number that were available, and this book was one that was selected, and they sent a thousand volumes to France, and from this it is indicative to my mind that it has been received as a standard work, by the engineering profession.

Q. I hand you another book, Mr. Lyndon. Will you please tell us

what that book is?

A. This is electrical engineers hand book which is edited by Horatio Foster. This is a work that is and has been standard as an electrical engineers hand book for certainly fifteen, and

110 I think eighteen years.

Q. Mr. Lyndon, I believe I noticed that in the preface or some introductory statement in that book, where Mr. Foster says it is compiled or adopted by Collaboration of a great number of eminent specialists. Isn't there some such statement in there, or do you know?

A. Yes, he says with the collaboration of eminent specialists.

Q. Now, are you recognized by Mr. Foster and given credit as one

of the eminent specialists in that work?

A. I wrote two sections in his work, but the one which bears most on this case is the one on resionence and alternating current circuits.

Mr. D. A. Frank: I concede that Mr. Lyndon is an expert on batteries.

(By Mr. Howard:)

Q. Mr. Lyndon, had you finished on this question of reference?

A. Resionence is one of the most complex phenomena that we have in alternating currents and it was my attempt to clarify this subject and make east reading for any electrical engineer and it has some bearing on telephone work, because any subject or any treatise on scillating or pulsating currents is applicable to the theory of the telephone. The fact that the books are not more compilations but represent original work, original thought and new methods of treatment is indicated here by this work of Jumau. It is the most

comprehensive treatise on the storage battery, I think, that has ever been written. It is about a thousand pages and 111 therefore much too comprehensive to have ever been translated into English. It is in the French language, but on,-beginning on page 827 and continuing and including page 843 of this work, Mr. Jumau has taken my original work and the mathematical investigations of certain automatic dynamo electrical machines and followed them through vertabim as I originally gave them, and on each page, or nearly each page he gives me credit for having done the original work, and having originally made the investigations which have become standard in all technical literature on the subject in every language.

Q. Mr. Lyndon, did you make any contributions to the Ency-

clopedia Britian-ica?

A. Yes, I wrote the section on transmission, in the new edition.

Q. Are you given credit for it there?

A. No. The commission to write that came from London to Dr. Lou Duncan, who was then my partner and I wrote the article and it was naturally signed by Dr. Duncan.

Q. Although it was written by you? A. Yes, I wrote it in toto.

Q. Mr. Lyndon, have you in recent time, been engaged in andy scientific investigations of any character?

A. Yes, I have been engaged in a great many and of various kinds,—considerable laboratory work.

Q. Have you not recently been on the staff of Thomas Edison? A. I was consulting engineer for Mr. Edison for about three years.

Q. During what period, Mr. Lyndon?

A. From the beginning,-no, from about the middle of 1916 to the end of 1918. —the end of 1919,—not the end. 112

I left the Edison Laboratory in August of last year, but Mr. Edison retained my name in its proper place on the pay roll for some time longer than that.

Q. Are you still associated in any way with Mr. Edison or have

you ceased your connection with him?

A. No, except I am retained by the Edison interests. I am under general retainer and I did some special work for them in December of last year.

Q. You have been engaged in other scientific work, in fact that

has been your life work.

A. Substantially,

Q. Without shocking your modesty as Mr. Frank so greatly fears, you feel with a becoming sense of modesty that you are somewhat of a scientist?

A. I think so, truly being oath.

- Q. Mr. Frank is very particular about your being under oath and we will save some time; Do you thoroughly understand you are under oath?
- A. Yes.
 Q. And it won't be necessary for Mr. Frank to remind you of it during the course of investigation?

A. It won't be necessary, but I don't object to it.
Q. Mr. Lyndon, did you ever manage a telephone company?

Q. I am surprised at you, Mr. Lyndon. Could you count a row of poles? A. Yes.

Q. Could you measure the number of feet of wire if we had the time to do it, and were paid sufficiently for it? 113

A. Certainly.

Q. You could compute the number of feet of conduit if you were told and given the dimensions of the conduit?

A. Yes.
Q. The length and breadth and thickness?

A. Yes.

Q. You could tell something about the different panels in a switch board, the number of jacks and things of that kind,-you know something of those things?

A. Yes.
Q. You could tell the number of cubic feet, I believe, of a trench in which a conduit is carried?

A. Yes.

Q. And you could make, without any great strain all the mathematical computations that are necessary to do that?

A. Certainly.

Q. Now, could you conceive of the idea, Mr. Lyndon, of your

being able to take a staff of boys, bright, quick energetic boys, and going over a telephone plant and joiting down the different material items of physical property that constitute it, setting them down on paper to tabulated form, you could do that you think

A. Surely.

Q. You never did do it personally, did you. That is get right out

on the ground and do it.

A. I don't recall ever having done it personally with a telephone system.

Q. You have done it in other utility property?
A. In other utilities, yes, but I don't recall any telephone 114 system at the present time that I personally went over and made an inventory.

Q. You wouldn't at all be stunned or confounded with the proposition of undertaking to prepare an inventory like that or to supervise

A. Oh no.

Q. You feel very confident you could do it and get it up in just as good form as that?

A. Yes. It's not a matter of any difficulty for any engineer.

Q. But concerning this appraisal, that's something that's pretty hard to do, to take a list of these things, after you have the list, to take a catalogue or write to the factories and get prices and set them down opposite the list, you can do that?

A. Yes, it isn't difficult, merely tedious.

Q. In other words, it's clerk work really instead of work that a man who values his time very highly would engage, in?

A. Yes. Q. Mr. Lyndon, you never operated a telephone a day as I understand you?

A. No.

Q. You never tried to manage a telephone company?
A. Never did.

Q. You could not afford to do so on the salary usually paid the manager of the local telephone property, that is considering your material interest?

A. I am not sure, but I hardly think so.

Q. Assuming that they are paid \$5,000.00 or \$6,000.00 a 115 year-you would not want to undertake it for 8 or 10 thousand a year?

A. No.

Q. You would not want to adopt that kind of work?

A. Certainly not.

Q. Mr. Lyndon, is there any reason why a good, intelligent, bright, young man, to say nothing of an engineer, who has never managed a telephone Company, bringing his faculties to bear upon the problem and properly valuating a telephone property.

A. No, the valuing of any public utility does not require a high order of intelligence or intellectual work. It is a matter mostly of

routine and detail.

Q. And is usually delegated by the supervising man to his assistants or subordinates?

A. Yes, practically always, that is practically always in the cases that I personally know of. I don't know the methods that are

adopted by the Bell Company.

Q. Is there any reasons, Mr. Lyndon, why a man that never saw a switch board or don't have any more * * * has no conception whatever of how the switches and changes, the mechanism that transmits the voice from one person to another, for them to be absolutely ignorant of that—is there any reason why he should have a thorough conception of that in order to valuate physical properties, to permit of that being done?

A. No, a technical knowledge of the operation of any utility is not even remotely connected with the valuation of it after it has once been installed no more than the owner of a ware house with

furniture and potatoes in it should be required to be a farmer and potato expert, and likewise a timber grower and an expert in the manufacture of furniture in order to determine the value of what he might have in his warehouse. The values are fixed by the facts that the property exists; you don't have to know what's in it or behind it provided you assume that the engineers who placed it were intelligent, and if the company that paid for it was honest. There are the only essentials; everything comes from the fact that the property is there and the cost is on the company's books, or if reproduction values be adopted you simply get the cost of this apparatus from the manufacturer and don't care what it's name is, or how it works, * * * it cost so much money and here it is.

Q. Then, as I get it, you are not here with the idea that it takes any great expert to value this property, but any man of common sense and good judgment who applies himself to it for a reasonable length of time can do the work?

A. Unquestionably. There is no technical detail necessary. I am absolutely sure that the court can make just as good a valuation

as any engineer if given the time.

Q. You will give yourself credit for common sense and reasonably good intelligence?

Mr. D. A. Frank: I don't think the witness is competent to pass on his own mental qualifications.

Mr. Howard: I think that will be shown.

(By Mr. Howard:)

Q. I will give you credit for being a man of reasonably good judgment and common sense, and endowed by nature with pretty fair intelligence, but keeping in mind this modesty you will say that you have had sufficient and special training and informa-

tion that enables you to know something about the rules of electricity, and by the way, electricity has much to do with the transmitting of these sounds over the wires?

A. Yes.

Q. And receiving them and transmitting them, in fact, telephony is largely an electrical art, -considered such?

Q. Now, we will say then that you have in addition to this ordinary endowment in the way of intelligence of the average man, that you have a specific knowledge of electricity in the matter of conducting it, receiving it and transmitting it; you will confess to know that

much, won't you?

A. Yes.

Q. Then you have had a course in mathematics, I suppose, beyond Robinson's old higher arithmetic?

A. Yes. Q. But a man that has got a th-rough knowledge and familiarity with Robinson's Old Higher Arithmetic can make the necessary calculations?

A. He can make every one required for the valuation of a public utility.

Q. Well, I will not pursue your technical training beyond Robinson's Arithmetic, and you have got enough of that to know how to make all these computations in regard to trenches and conduits and to know the lineal feet and cubic feet of all these things?

A. Yes.

Q. Now is regard to the economics of construction, you are 118 something of a constructing engineer, are you not, Mr. Lyndon?

A. Yes.

Q. And to properly follow that profession you must know something about the economics of engineering and reaching the various points by the most direct method and so constructing plants so as to perform the functions in the most economical way, -you have put some study into these questions?

A. Yes.

Mr. D. A. Frank: Ask him and let him tell it instead of your telling it.

(By Mr. Howard:)

Q. Well, then, in a general way, Mr. Lyndon, just state,—he objects to my asking these questions. State how, in a general way, let us have your idea of the technical experience and knowledge that is necessary to properly valuate a public utility, to analyze its accounts its reserve fund that it might set aside to keep up its properties, and its administration of its expenditures and getting the best service out of the employees, and getting the most economical service in all these ways—what technical information and knowledge have you had?

A. To value a plant very little is required. A knowledge of arithmetic and the ability to understand accounts to a certain extent, and the ability to count the number of objects of different kinds and character and to make a list of them, and the ability to find the cost of each object and that is,—except the knowledge that must either

have come from long personal experience or come from the long personal experience of sombeody else and is merely stated to you about what amount is allowable for various over heads and what amounts are allowable for depreciation and computations of

that same character. Of course, it is obvious that no pro-119 fessional man, whether he be a lawyer, a doctor, or an engineer has one-tenth of his own knowledge from his own professional experience; life is too short. Most of the knowledge comes from the aggregate experience of other men that has been put in definite form, so that we can gain in one hour what other men have taken some years to gain; for instance, in these two volumes any engineer may read in two days or three, if he would apply himself to it, are concentrated six years of difficult experience and it is not necessary for the next engineer to pass through this same experience, and so it is that every engineer has a fund of knowledge which he has obtained from the experience of others, and I dare say it is true in law There is no experience reand I know it to be true in medicine. quired to get a very fair valuation of a public utility. reason why engineers are chosen rather than somebody else is that in the beginning valuations were made based on a knowledge of construction costs and the engineers were the only class of men who had that knowledge.

Q. That's just what I was going to ask you. I was wondering why it was that if an ordinary man could make those valuations, why we couldn't save something, why we couldn't get them instead of you Why are you here, and why are these high priced men engineers. that the company has brought here,-why are you all here?

A. Largely habit. It was first necessary to employ engineers to make valuations because things were hazy and nebulous. There were no books that were satisfactory and valuations had to be made with a full knowledge of construction costs, and the details

of construction costs, and the incidental architectu-al expenses that were incurred. Engineers were the only body of men who were competent to make any such estimates and in that way they became rather more accustomed to making figures on valuations and later, while books have become available,-by that I mean while public utility records have been kept in such a definite manner that there is no longer any estimating to do, why, as a matter of ability, and as a matter of facility, engineers have been making public utility valuations, but as I have stated, it is not a high order of intellectual work nor is it so regarded in the engineers profession.

Q. They have a little better understanding and better methods of getting at them, and have had naturally a little more experience

than the average run of men in thees matters?

A. That is all. Q. Mr. Lyndon, then in that capacity, and I suppose, somewhat as a diversion from your larger scientific works, you have at times, valuated some properties, a few of the-, have you not?

A. Yes. Q. Have you any of them in mind?

A. Well, the firm of Duncan & Lyndon had in hand the valuation

of a large number of independent telephone systems in 1907, for a corporation that intended to establish a system from coast to coast, in active competition with the Bell Company. I did not personally make any inspection or valuations. We had a staff of men who did the actual work and we took an occassional look over the documents. Then the electric system at Dover, N. H.; the system at Lynchburg, Va.; Charleston, S. C.; two at Harrisburg, Pa.; one at or near

Bristol, Tenn.; that was a hyro-electric plant and I have made 121 valuations on all public utilities in this city. These are all

that occur to me at the present time. Q. Then, when you were called upon to make a valuation of this plant you gave it due consideration and entered into it without any particular trepidation or misgiving as to your ability or experience when you undertook the task?

 A. Yes.
 Q. On page 18 of your echibit #2, Mr. Lyndon, what does that set up.

A. That's a table of aerial cables showing the amount on hand in 1901, or rather the cost as carried on the company's books, in 1901, with also subsequent additions down to the end of 1919.

Q. Showing you a total of how much?

A. \$574,326.00.

Q. As of what date?

A. January 1st, or December 31st, 1919. Q. Are there any removals shown on this? A. None.

Q. That's simply a matter of taking the company's books and stting up the costs of aerial cable as disclosed by them, taking the amount on hand in 1901 and making all subsequent additions?

The actual expenditures as disclosed by the company's

books.

Q. Now, Mr. Lyndon, on page 20 of your exhibit #2, I find a table,—what does that have reference to.

A. That's aerial wires. The value for the aerial wires in 1907. Q. First, Mr. Lyndon, does it bear the value you gave to that?

A. The cost price was \$91,033.00.

Q. Cost new? A. Yes.

Q. As of the end of the year 1919?

A. 1919, Yes.

Q. Now, please detail to us how you arrived at that figure? A. The explanation of this figure is best shown by the quotation which I make from the report of 1918.

Mr. J. D. Frank: What page, Mr. Lyndon?

A. 113. (Reading from report.) "The values of aerial wires s given by the telephone company's books, are so much greater han the values either shown by our inventory or claimed by the ompany, that some assumption must be made in order to reach any onclusion as to its value. The annual depreciation and present inventory shows the amount of aerial wire in place of having a first

cost of about approximately \$115,000.00. This value is reached by a applying the company's unit prices to the inventory, and which, by the way, is the company's inventory. The company's books show a total cost value of \$267,933.00, or more than twice as much as the company claims to own."

Q. You say the company claims to own. How do you determine

what the company claims to own?

A. By the company's inventory and its unit prices,—the amount of wire on hand as shown by the company's inventory and the unit prices and costs.

Q. Now, is that a departure from the history of the company of— In this particular instance have you departed from the costs,—origi-

nal cost of the property and set it up on another basis?

A. Whether it is a real departure or not is open to question. It is definitely a rejection of the book figures because the book 123 figures of material on hand did not then in any way correspond, and we felt and still feel that whereever the company has not the property on hand commensurate with the figures written on the books, that the property in the service of the public should be the ruling factor, and in that much we have departed in this one in-

Q. This would indicate from the company's books that they had brought a great deal of wire at one time that was not at the time put

in the industry.

A. My own view is that they had placed and spent the \$267,000.00 for aerial wire; that it had been changed, removed and the amount remaining, represented the first cost of \$115,000.00 and that the removals which would cons-itute losses were taken care of in some other way, I believe, in the maintenance account.

Q. At any rate, the wire was not on hand, and for that reason you

did not allow the cost price of it?

stance from the company's books.

A. Didn't allow the cost price of it because it was not on hand. Q. Yet me say in connection with this,—this is one of the variations from the cost method which you stated in the outset?

A. This is one of the two items, in which I departed from the

actual book records.

Q. Now, just how is this amount you set up here determined? Perhaps you have stated it, but just what does this figure of \$91,-033.00 represent?

A. First, the aerial wires are two characters, and is the real aerial and the drop wires. The value of \$267,000.00 as set up on the company's books, and the first cost value of the property, of this character of property on hand that we found at the time of the inventory of \$118,000.00 included both aerials and

drops. Q. Now, in another place in this exhibit you have set up an item

of drop wires, have you not?

A. Yes. Q. Where does that appear in your exhibit?

A. That appears on page 22. Q. And what do you find to be the cost new of the drop wires? A. \$44,910.00.

Q. Which added to the \$91,033.00 would be a total of \$135,-943.00, would it not?

A. Yes. Q. Then-

A. (Interrupting.) We find the two values by taking the amounts that were disclosed by the inventory in 1918, or rather at the end of 1917, and adding the amounts which were put in place in 1918 and 1919.

Q. Yes, Now, the sum of these figures, you have in there, I believe, the sum of the aerial wires and the aerial drop wire?

A. Is \$135,943.00.

Q. Now, how much does that vary from the cost of aerial and drop wire both as set up on the books of the company?

A. It is about half.

Q. Suppose you make the calculation, if you don't mind, Mr. Lyndon, let's get it exactly.

A. In 1917 the amount carried on the company's books for

total aerial wire was-

Q. (Interrupting.) Including drop wire?

A. Yes, including drop wire, was \$267,933.00. The company's books show additions, wires, of both kinds, of \$15,579.00 since that time, which would give the total present book value, if the books had been maintained as in 1917, of \$274,512.00.

Q. And that leaves a difference of-

A. (Interrupting.) And we find that there is \$135,943.00 on hand which is a deficiency of \$138,569.00 between the value as figured by the company's market value,-at the company's own prices and that of the books, in other words, the wire on hand, or rather the cost new of the wire on hand is slightly less than half that of the amount as carried on the books.

Q. And in this set up of the value of the property you have allowed only the inventory value as carried by the company itself?

Q. That's not your figure or arbitrarily made, you adopt the compan-'s inventory and prices?

A. Up to 1917 and the actual addition sicne that time.

Q. And that's the manner in which you account for this valuation?

A. Yes.

Q. In your set up of the cost as carried on the books of the company?

A. Exactly.

Q. In other words, the company seems to have been carrying a cost value of property that it did not have on hand, on aerial wire?

A. Yes, and the reason is that aerial wires change very rapidly and particularly drop wires; they are changed and removed and there is very little salvage from them because

the life is comparatively short and-

Q. (Interrupting.) With this cost of aerial wine as carried on the books of the company, is included the cost of the aerial wire used by the Home Telephone Company which it took over?



A. It includes that as far as the book cost of the Home Telephone Company for aerial wire goes, that is, the book cost of the aerial wire taken over from the Houston Home Telephone Company is put into the additon as a portion of the amount owned by the Southwestern Telephone & Tel. Co.

Q. Well, now, Mr. Lyndon, as a physical fact in taking over a competing- Did you know anything about the location of the

Home Telephone Company's poles lines, and aerial wire?

A. In a general way. I made a report on that company in 1914. Q. Did it to any extent parallel the lines of the Southwestern

Company? A. To some extent, necessarily. They were supposed to be competing companies. I know there were certain buildings in which

the buildings were wired by both companies.

Q. Would they or not, naturally take out of use the aerial wire

when the two were combined?

A. Very probably, and I understand there is considerable of the Home Telephone Company's equipment in the way of conduits, cables, toll lines, and all the rest that now are not in use. It is expected that they will go in use, but it is my understanding that some of them are not now in use.

Q. But insofar as they parallel the other lines, they are not really

useful in the plant?

A. No, but their cost has been allowed in the set ups. 127 Q. You handle the drop wire in the same method that you did the other aerial wire?

A. Yes.

Q. Now, Mr. Lyndon taking first this cost valuation of physical plants—of actual cost, can you give us the final figure on this new without depreciation?

A. New, without depreciation?

Q. Yes, sir. You have a summary of that, have you not?

A. Yes. \$3,663,432.00.

The Master: Give me those figures again, please.

A. \$3,663,432.00.

(By Mr. Howard:)

Q. Now, that as I understand you, is the actual cost of this property, as carried on the books of the company?

Mr. D. A. Frank: Ask the man the question. Don't tell him and testify yourself as you have all through the case.

(By Mr. Howard:)

Q. Mr. Lyndon, I will see whether my understanding of this matter is correct or not, that this figure that you have just given The Master, \$3,663,432.00 is the actual cost of the physical plant property of this company, except as to the item of aerial wire, wherein you have reduced in some 100,000 and odd dollars, and excepting also the acquisition of the Home Telephone Company, and that as to the Home Telephone Company it does include the actual cost of the physical property used in the plant?

A. That is true, with the exception of one other item, which is land. The land is taken at the value as of 1914, and as then valued, and which I understand was in excess

of the cost.

Q. Then, it, with the qualification as to aerial wire and as to the question of the Home Telephone Company is in excess of the cost

A. By whatever the land is in excess.

Q. By whatever amount that value of land as here set out exceeds the costs of the land?

Mr. Howard: We introduce that in evidence as Lyndon's exhibit No. 5.

(The document referred to was thereupon received in evidence marked "Lyndon Exhibit No. 5," and is filed herewith.)

Q. Mr. Lyndon, I have introduced in evidence, this paper, as Exhibit No. 5, this paper styled "Adjusted Valuation of Houston Home Telephone Company's property." I take it from this, that you have undertaken to make some adjustment and to account and properly carry into capital account the portion of this property that you deem should be carried into capital account?

A. Yes. Q. Will you state to the Court, just how you handled that subject,

Mr. Lyndon?

A. The records show that the Southwestern Telegraph & Telephone Company paid \$359,740.00 in cash, and assumed a one million dollar bonded indebtedness of the Houston Home Telephone Company. If this bonded indebtedness was taken at its fact value and discharged at its face value, it would make a total pur-

chase price of \$1,359,740.00. Now, subsequent to the pur-129 chase of this property, the real estate, central station equipment, and substation equipment, were all sold by the Southwestern Telegraph & Telephone Company. The company retained the pole lines, the aerial wires, the aerial cables, underground conduits and cables, office furniture and fixtures, although I understand that they stored the office furniture and fixtures, but I do not know, teams and vehicles, tools and miscellaneous supplies. Obviously, only those things which the company has attached and made use of, either real or titular, that they took over from the Houston Home Telephone Company, can be added to the capital account. There was nothing new done, everything that they still have was in the public service. Now the sum of these so called net additions to plant, amount to \$636,161.00.

Q. Where does that appear?

A. Page 2.

What do you call the first page? Q. Page 2.

A. The first page is the heading, "Adjusted Valuation."

Q. All right.

A. Now, the sum of these so called net additions to plant plus the amount received from the sale of the other portion of the property, amounting to \$636,161,00, leaving a difference of \$723,579.00, which represented nothing, no assets, and was written up therefore, under the title of "going value." This, of course, always assume that these bonds of a million dollars were paid in actual cash by the company.

(By Mr. D. A. Frank:)

Q. You say it is written up as "going Value"?

A. That is what I understand. I think I have some of

130 your records to show it, or some statement.

Q. Never was,

A. I will give you later the basis of the statement written in, some intangible value. Now, on page 8, of this exhibit is set forth each of the items that went to make up the Houston Home Company's equipment, its cost value new as taken from the books of the Houston Home Telephone Company and the Southwestern Telegraph and Telephone Company's valuation. We find that the pole lines, its cost value new was \$66,000.00, and the Southwestern Company valued it at \$59,000.00.

(By Mr. Frank:)

Q. You mean by "cost value" the same as "Cost?"

A. Well, these values are the cost of the property to the Houston Home Telephone Company.

Q. I am just unfamiliar with the term "Cost value"; it is either

"Cost" or "Value".

A. But they are both the same thing. These utility people have attempted to separate them, but they go in double harness forever, "cost value".

Q. "Cost value". All right, go ahead.

A. In the first column is the cost new or Cost Value new, while in the second is the arbitrary valuation put on them by the S. W. T. & T. Co., at the time of its purchase. Now, all of the items which were retained in the service of the public here and have been attached to the Southwestern Telegraph & Telephone Company's property, have been put in as the actual value, and substituted for-and the sum of them is substituted for the million and some odd thousand dollars.

(By Mr. Howard:)

Q. What is the sum of them. Mr. Lyndon?

A. The sum is not given here, but each of the items is included in that "cost value" document No 2 and each one of these items are put in under the proper heading and for the year in which it was bought. You will observe that in some of those for the year 1915, there are two values shown of addition; one

is the additions which were made by the company to its own plant; the other, is the value of the additions taken over that year from the Houston Home Telephone Company, and wherever two values for 1915 are observed, why they represent the two different items. Of course, this column can easily by footed up and the amount determined; \$669,716.00; from that ought to be deducted the items of central office equipment, building and land and sub-stations. Those portions of the property were sold, and that left as a remaining amount attached to the property here, \$432,013.00. These items are as follows: Oile line, \$68,000.00; Aerial Cable \$81,738.00; Aerial wire, \$11,825.00; Underground Conduits \$122,772.00; Underground Cable, \$118,668.00.
Q. You have got that \$116 one hundred and sixteen, here.

A. Didn't I read it one hundred and sixteen?

Q. You read it One hundred and eighteen.
A. Well, that is not a very good cooy. I am in doubt now, whether it is One Hundred Sixteen or One Hundred Eighteen.

Q. How is that Mr. Lyndon?

A. I am not clear still as to whether that is One Hundred and Sixteen or One Hundred and Eighteen; it is not a very good copy.

The Master: \$116,668,00.

A. Then this total is out \$2,000.00, because I used one hundred and eighteen; so that would be \$430,013.00 and the value of 132 the property sold added to that amount makes \$669,716.00, which was the total benefit, the total tangible benefit that obtained to the company for the purchase of the Houston Home Telephone Company.

Q. \$669,000.00 and that has been included in your costs, in the

values as set up as you have detailed to me.

A. No, only the \$430,000.00 have been included because the rest was in the form of cash, which presumably the company used for some other purpose, possibly for extensions.

Q. Realized from the sale of part of this property?

A. Yes, that is the property-

Q. (Interrupting.) In other words, you have included as I understand you, all the property that this company availed itself of in the operation of this plant?

Q. What further have you to say in regard to this exhibit, Mr.

Lyndon?

A. Well, simply that the valuations of the Southwestern Telephone and Telegraph Company, do not in any case tally with the costs of the property, that was paid by the Houston Home Telephone Company. I have checked this against the figures which I obtained from the Houston Home Telephone Company, and the valuation which I made of its plant assisted by its engineers at the time, and the practical aspection of all of its figures from the books of the company, show that the records which we have in the 1914 report is very definite and very clear and it is from those figures that these in this exhibit have been taken.

Q. Mr. Lyndon, just for the record, the Home Telephone Company's properties were purchased by The Southwestern 133 Telegraph & Telephone Company after the year 1914, and after this inventory from which you computed the reproduction in 1914, was made?

A. Ues, it was purchased subsequent to that time.

Q. Now, Mr. Lyndon, I understand, there is four hundred and forty two thousand-

A. (Interrupting.) \$430,000.00.

Q. (Continuing:) \$430,000.00 in property that has been carried into this consolidated plant and the company realized in cash from the sale of the physical property, you say, some certain amount?

A. About \$267,000.00 without being accurate.

Q. About \$267,000.00?

- A. Which, of course, reduces the investment from a million three hundred and sixty odd thousand dollars.
- Q. That then amounted to three hundred and sixty some thousand dollars, I believe you said?

A. Yes.
Q. Leaving how much balance of the purchase amount or price of the Home Telephone Company properties?

A. Practically \$720,000.00.

Q. \$720,000.00 Mr. Lyndon, on that \$720,000.00, what h-s been furnished this community here in in the way of property used and useful in the telephone business and furnishing the people of this community the service, telephone service?

A. Nothing.

(By Mr. D. A. Frank:)

Q. Absolutely nothing?

A. Less than nothing. Some property that was used and useful for telephone service in this community was removed.

134 Q. That, though they say should be added to capital account and the people of this community should pay them eight per cent return upon it. I don't think they want any depreciation on that because it is already depreciated. Replacement re-

Mr. D. A. Frank (interrupting): Your own witness said it should be.

Q. (Continuing:) Mr. Lyndon, I would like to grasp in some way or other, if there is any reason on earth, why the people of this community should pay on that \$720,000.00, if they just apparently with their eyes open, and for certain purposes threw away \$720,-000.00, now what is the motive in that, can you discover that? And determine it? Tell us something about it.

Mr. D. A. Frank: I don't see the materiality of it; he has already answered the question that it is absolutely of no value whatever.

Mr. Howard: I want to find out something about it.

A. I don't know. The acquisition of that property, its removal from the service and the call for a higher rate, seemed to follow in a succession that was more than a coincidence. It may be that a value of seven hundred and odd thousand dollars is acquired by putting a possible competitor out of service. I can't see the logic of paying a million-always assuming that these bonds were paid for at a million dollars, of course, that is the assumption that I am working on.

Q. (Interrupting.) That might be a violent assumption; Mr. Frank thinks you have given a violent assumption to that.

- 135 A. I can't understand how a group of business men would pay \$1,400,000.00, for a company that cost \$726,000.00, was in debt, not even making its depreciation, what motive animated them is beyond me to even suggest.
- Mr. D. A. Frank (interrupting:) You are young vet in the telephone business.
- A. (Continuing:) I hope I will never grow to where I will pay \$1,400,000.00 for a \$700,000.00 property, and then trust to be able to unload it on a municipality.
- Mr. D. A. Frank: Nobody has tried to unload it yet, on a municipality.
- A. (Continuing:) But I can't even remotely suggest a reason for

(By Mr. Howard:)

Q. At any rate, so far as you can ascertain, and you have given this question some study, you can't see where it is serving the public in the matter of giving them telephone service?

A. No, I can't.

Q. And for that reason, you would naturally hesitate to set it up as a capital investment, upon which they would pay in an endeavor to be fair to the utility?

A. I cannot see any rational reason for admitting it as an amount

on which the public should pay a continuous return.

Q. You have not failed to set that up on account of your ever having operated a telephone company or anything of that kind, that was not your reason for failing to set that up, you have not failed to set it up trough any prejudice, or animosity, or ill feel-

ing, that you can have for this telephone company or for anybody, have you?

136

Mr. D. A. Frank: What difference does it make about his motive; his motive is not attacked.

A. Oh, no. Judge, I have not only no animosity against utili-ties, but I have done a few things for them, some of them are friendly towards me, it is simply an effort to determine the facts.

Q. It is an absolutely impersonal question with you, is it not,

Mr. Lyndon?

A. Absolutely.

Q. And you, in trying to bring some light before this Court, in arriving at a fair solution of this question as between the utility and the community, have brought your honest and best judgment to bear upon this question?

A. I have and stated the reasons for it. If they are sufficient, they

cover it; if they are not sufficient, why it cannot be helped.

Q. Well, can you put this in the same category that you referred to awhile ago, that the company had been operating here and through some misfortune and epidemic or something of that kind, they had sustained a loss, a very substantial loss in their earnings for a particular year, you would think the community was bound to kind of hold them up under a contingency of that kind?

A. Certainly, a loss sustained in fulfilling-made by public need,

should be met by the public.

Q. Have you tried to do that and appraoach this matter of \$720,-

000.00 from every angle you can thing of?

A. Yes, and not just at the present time, but the matter 137 came up over a year ago in Washington and I was then unable to see any basis for anybody in authority admitting it as a part of the capital account, and I am equally unable to see it now. You see, if they were allowed, assume that it is a private and allowable transaction, what is the limit?

138 Redirect examination.

(Questions by Mr. Howard:)

Q. Mr. Lyndon, I wish you would take this 1916 report filed with the City. First, Mr. Lyndon have you attempted to get all the reports, the annual reports filed by the Telephone Company with the City?

A. I have within the last two days; since I knew that they were

on file with the City, I have attempted to do that.

Q. You have been unable to get them all, I believe, for some reason or other?

A. Yes, the one or two, I think three, have evidently been misplaced, and another thing is, they go back only to 1913 in any case.

O. Well new Mr. Lyndon turning to the report filed for

Q. Well, now, Mr. Lyndon, turning to the report filed for

Mr. D. A. Frank: Judge, we are having that report typed that we introduced yesterday.

Mr. Howard: Well, you just set forth the totals in that little statement you had this morning?

Mr. D. A. Frank: Yes.

Mr. Howard: Well, that showed the replacement undoubtedly, but there was some other things I wanted to show.

Q. Will you turn, Mr. Lyndon, to the set-up over there for the

year 1918. Begin first with 1913.

A. 1913 report, the set-up of the property is dated January 1, 1914. The total inside the City is \$2,129,554.00; outside the City, \$346,681.00; making a total of \$2,476,236.00

for the total physical equipment of the plant; this is physical only, of course.

Q. How do the values purport to be arrived at?

A. The value of each general item is set down, but I understand

are as taken from the company's books.

Q. Have you anything on there that shows how they are set up in 1913? Well, point out to me, will you in that report where the value of these different classifications of property is set up on the reproduction theory?

A. It is not stated here on what theory it is set up.

Q. But, what I asked you is to point out to me, is it in there where it is set up on the reproduction theory?

A. No.

Mr. D. A. Frank: I don't suppose it is supposed to be set up on that basis.

Mr. Howard: Well, I will introduce the ordinance directly.

Mr. D. A. Frank: This is necessarily the book cost.

Q. What is the amount?

A. The amounts for December 31st, 1914, for total equipment, that is physical plant, is \$2,627,345.00, to which are added miscellaneous property and proportion of working capital, bringing it to about \$2,765,180.00.

Q. Where is there any reproduction set up in that?

A. No, it is simply statements of plant values. Oh, all values of the property given in this report are taken from and represent the corresponding entries on the general books of the company with the exception of miscellaneous property which value represents actual inventory as of December 31, 1914.

Q. Was there a similar statement in the 1913 report?

A. No statement.

Mr. D. A. Frank: All taken from the books though.
A. (Continuing:) Oh, it is evidently a book statement.

Q. In 1916 what is the value?

A. The values given is \$3,193,766.00 for plant value, to which are added miscellaneous property of \$73,891.00 and proportion of working capital, \$114,634.00, making a total of \$3,778,941.00 and all the values are from the books, except the miscellaneous property, which is an inventory of December 31, 1916, so that the miscellaneous property is substantially a reproduction, value, as I understand it, as of December 31, 1916.

Q. Let me see where it is. That is \$74,000.00 of three million seven hundred seventy-eight thousand dollars? You say that is reporduction?

A. Yes.

(By Mr. D. A. Frank:)

Q. About two per cent of it?

A. Yes, it is a negligible amount of it.

(By Mr. Howard:)

Q. That is in 1918. You say you are not able to get the 1917 or 1918 reports?

A. They have not been able to find them at the City Hall. Q. Take that last report, 1919?
A. This is as of December 31, 1919, which brings it to the 141 beginning of this year.

Q. There is a set-up value there, is there? A. There are two set-ups of the value. Q. Two different methods employed now?

A. With respect to the total plant, yes. The miscellaneous property values in each case seem to be actual inventories, but they are always small, it is about one and a quarter per cent of the total here, or just one per cent of the total.

(By Mr. D. A. Frank:)

Q. Well, what is the figure?

A. The plant value is \$3,211,891.00. There are interest during construction of \$8,051,00; miscellaneous property, \$41,750.00; Working Capital, \$238,818.00, the total being \$4,100,512.00.

Q. That is the book cost as they set it up?

A. That is stated, so stated there.

(By Judge Powell:)

Q. That is the first of January this year?
A. Yes, December 31st.

Judge Powell: Yes.

(By Mr. Howard:)

Q. Is that the only method adopted of setting up the value as of the year, 1919?

Mile Ward

A. No, there is a reproduction cost here. Q. What is the reproduction cost?

A. The total plant cost is \$5,687,605.00. To that are added, miscellaneous property, which is the same as in the previous state-

ment, namely, \$41,750.00. The working capital is the same as in the previous statement, \$238,818.00. Also the Cost of 142 Establishing business, \$992,881.00.

Q. That is the first time so far as the reports you have have shown where they set up anything like a million dollars Cost of Establishing business?

A. Yes, the total of these figures is \$6,961,051.00.

Mr. Howard: Now, I introduce in evidence the ordinances of the City of Houston, being Sections 995 and 996, which requires the telephone company, all telephone companies operating in the City; also Sections 996, 997, 998 and 999, requiring all telephone companies to make certain reports to the City. Mr. D. A. Frank: What is the revelancy and pertinency of it?

Mr. Howard: Why it is an ordinance passed by the City requiring the telephone companies to furnish it date upon which to form a basis of the operations of the telephone company, and of its earnings, whereby the utility is required to set up the basis of its earnings, its value, in relation to the ordinances requiring the utilities to furnish that information.

Q. Now, Mr. Lyndon, these papers that you have just mentioned, are annual reports, are they not, filed by the utility with the public Service Commissioner of the City of Houston, in compliance with the ordinance that I have just introduced?

A. Yes.

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Q. Now, the first and the only report, so far as you have been able to find, was the annual report—so far as you have been able to find in which any claim or basis has been made to the

City for the purposes, in connection with the matter of rate or for any other purposes in which a reproduction value was claimed? Is the inventory or the annual report filed for 1919,

after this rate hearing begun?

A. That is the only one, of course, we have not 1918.

Q. I have already qualified here by saying the only ones you have been able to find.

A. Yes.

Q. You don't know about the others?

Q. In 1913, '14 and '15, there was no set-ups of the property values?

A. No. sir.

Mr. D. A. Frank: Except in the hearing of 1917, which was before the City-

Mr. J. D. Frank (interrupting): A statement was filed Decem-

ber, 1917.

Mr. Howard: Of reproduction value?

Mr. J. D. Frank: Yes.

Mr. Duls: Exhibit No. 2, filed with the City shows the value of the property, expenses and everything.

(By Mr. Howard:)

Q. I will have you examine this then, Mr. Lyndon.

A. Page 1.

Mr. J. D. Frank (interrupting): Now, this is Exhibit No. 144 2, in this case.

A. (Continuing:) Makes the following statement under the heading "Value of Property." "A careful inventory and appraisement just completed." The date being December 26, 1917.

Q. I don't care so much about your reading that, does it show

the property as set up on the reproduction basis? A. Uses.

Q. Shows the value?

A. It does.

Q. Does it also show the cost or book value?

Mr. Howard: While he is looking for that, will you gentlemen admit that this is the first annual report that you filed with the City, showing the value set up on a reproduction basis?

Mr. D. A. Frank: That is not an annual report, that is a statement for an increase in rate on December 26, 1917. What did you

want to do, stop us from setting up reproduction?

Mr. Howard: I want to show-

Mr. D. A. Frank: Well, we always make reports, Mr. Howard, on book figures.

Mr. Howard: I simply want to show that you never asserted any reproduction values.

A. I do not find any book values here.

Q. Now, Mr. Lyndon, examine the 1917 and the 1918? A. Well, they began filing these reports in 1918 with the City.

Q. I don't care anything for anything, except 1917 and 1918. Can

you find 1917 and '18 there?

A. In 1917, the plant values are set up in both ways, book cost and reproduction.

Q. 1917?A. Yes, sir.Q. Turn to 1918 and give the amounts.

A. That is for December 31, 1917, at the end of 1917.

Q. And give the amounts for the record.

A. The book value of the plant is \$3,593,123.00. To that is added Miscellaneous property of \$68,290.00, and to that is added proportion of Working Capital \$208,492.00, the total being \$3,869,915.00. The reproduction cost is given as \$4,693,416.00 for the plant value, \$68,290.00 for miscellaneous property, making a total cost of \$4,-761.706.00, but that excludes Working Capital.

(By Mr. D. A. Frank:)

Q. Does Working Capital appear on the report?

A. Working Capital appears in the statement of book values and is omitted from the statement of reproduction costs.

Q. Well, the reproduction is merely the physical plant?

A. Yes.

Q. Go ahead.

A. Now, for December 31, 1918, that is the beginning of 1919, the book value of the physical plant is \$3,596,847.00. To that is added Miscellaneous property.

Q. What have you got onto now?

A. Book value.

Q. Well, what was the reproduction value as filed in 1917, 146 did you get that in the record?

Mr. D. A. Frank: That is \$4,761,000.00, just physical property.

A. To that is added-

Q. (Interrupting:) Is the cost of establishing business included?

A. No, nor is the working capital.

Q. It is not, all right.

A. To that is added \$262,949.00, for Miscellaneous property and for Working Capital, \$214,688.00, makes the total Capital charge \$3,874,485.00. On the next succeeding page is a statement of reproduction cost in which the total plant cost including miscellaneous property, but excluding working capital is \$4,861,009.00.

Q. Four million? A. \$4,861,009.00.

Q. Mr. Lyndon, the last report we had, I believe, was filed as of the end of the year 1915, or the end of the year 1916?

A. The last one was 1919.

Q. The last ones succeeding these we have here?

A. 1918.

Q. Let's be sure of that.

Mr. D. A. Frank: That is what your notes show, Judge.

A. This is December 31, 1916.

Mr. Howard: I know that the application for a raise of rates was made in December, 1917.

Mr. J. D. Frank: That is your statement.

Mr. Howard: My statement. The application for a raise of rates, the only one so far as I have been able to find, the company has ever sought, was made first in December of the year 1917.

Mr. Powell: How long have you been City Soliciter, Judge How-

ard?

Mr. Howard: I was City Soliciter at that time.

Judge Powell: I know, but-

Mr. Howard (interrupting): I was in 1917.

Judge Powell: When did you begin?

Mr. Howard: About the middle of the year 1917.

Mr. Howard: Now, I wish to introduce at this time; what is

known as the Merger Ordinance.

Mr. Duls: That is already in. That is the Ordinance of 1915, authorizing the Merger of the Houston Home Telephone Company.

Q. Mr. Lyndon, will you take this report of 1919 and tuen to the pages where the value of the property is set up?

A. Where the value of the property is set up?

148 Judge Powell: That is page 11, I think.

A. (Continuing:) Which one Judge? There's two here.

Q. Well, I want them both, just the totals, that is all, of both methods, one is four—

A. \$4,100,512.00. Give the reproduction? \$6,961,055.00, that is, nine, six, one, naught, five, five.

Q. Mr. Lyndon, that includes more than the physical properties I believe, or portion—or proportion to, does it not?

A. Yes, the physical property is given as five million-

Mr. D. A. Frank (interrupting): \$5,687,600.00?

A. (Continuing:) A little more than that. The physical prop-

erty is given as \$5,729,355.00, the strictly physical property.

Q. Well, Mr. Lyndon, here's what I want to get definitely in the record, far more definite than the assumption you have to rely upon, you have got into the records definitely the book cost of this property?

A. Yes.

Q. At what figure? Let's get that in the record.
A. The company's book cost unadjusted, January, 1920—\$4,868,-That figure includes first complete toll equipment; second, the total loss on the Houston Home Telephone Company purchase; third, \$165,000.00 Working Capital; fourth, \$268,000.00 aerial wire; fifth, \$11,400.00 of office furniture and fixtures allocated to Houston but not in Houston; sixty, \$4,676.00 right-of-way; that book figure includes all of these items.

Q. That is the company's book figure? A. Yes. 149

Q. Now, have you adjusted that?

A. I have adjusted it.

Q. Now, what did you find as a final amount upon a proper ad-

justment of it?

A. I find that by still leaving the toll equipment in the assets, not making any deduction because of it, and deducting only \$723,-000.00 for the loss on The Houston Home purchase, which is the company's set-up, deducting \$65,000.00 working capital, leaving \$100.000.00, deducting \$132,000.00 of the aerial wire, leaving \$134,-000.00; deducting the \$11,400.00 of office furniture and fixtures not here; and deducting \$4,600.00 of right of way; the total deductions are \$936,000.00. Now, to the Company's book accounts we add \$75,000.00 as cost of establishing business. That applied to the deduction makes a total deduction of \$861,000.00. Now, deducting the \$861,000.00 from the company's book value, leaves the undepreciated value of January, 1920, \$4,007,800.00.

Q. \$4,007,800.00?

Yes, Four, naught, naught, seven, eight, naught, naught, \$4,007,800.00.

Q. That is what you have found to be the book value after making

the adjustments?

A. After making the adjustments that I have set forth here, but retaining in the assets of the company the whole toll equipment. There is no deduction for toll equipment.

Q. Let's see. Let's just go over those figures again. What

150 did you say the set-up of the company is, how much?

A. \$4,868,800.00.

Q. Now, you deduct \$700,000.00 at the same time from that and a lot of other items from that and still get four million-

A. \$4,007,000.00, Judge.

Q. \$4,007,000.00, which still includes the long distance.

A. Of the toll equipment.

(By Mr. D. A. Frank:)

Q. Toll equipment, where? A. In the City of Houston.

(By Mr. Howard:)

Q. No depreciation deducted?

A. No, no depreciation.

Q. And allowing for \$75,000.00 for cost of establishing business?

A. Yes.

Q. Working capital?

A. Yes.

Q. And everything included?

A. Yes, that is in addition to the \$4,007,800.00.

Q. That is your opinion as to the final value of this property

undepreciated?

A. Yes, Well, I want to modify that by stating that it is \$160,-000,00 in excess of what my figures for the value for undepreciated for the total assets of the company are. The difference arises in my taking the company's figure of \$723,000.00 as the loss on The Houston Home property, while in my set-up I took the actual cost of all the Houston Home property that was here as an asset and deducted that from the \$1,300,000.00 and some odd thousand, paid

for it by the existing telephone company, there is a greater

151 amount as a loss than the \$723,000.00.

Q. All right, Mr. Lyndon, so you get this figure of \$4,-007,000.00 do you?

A. Yes.
Q. The adjusted cost value undepreciated?

A. Yes.

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PLAINTIFF'S EXHIBIT #10.

A. E. Scott, Witness.

The Southwestern Telegraph & Telephone Co.

Total Cost of Property at Houston, Texas, as Shown by the Books.

										Y	e	8	r																			Total at of yea				amb		
001											0																					\$318,36	7.54			2,0	73	
002																			٠						9			٠				388,23	7.19			3,1	36	
003								9						9										٠								487,619				3,9	33	
004	9																															556,389	9.38			4,5	69	
005																																614,023	3.36			5,3		
006																																843,533	2.39			6,5		
007																																908,73				7,9	33	
800																																954.86				8,7		
909	-	•			-	_	-	1			-	-	-				-	-														1,108,92				0,6		
10	-	-			_	^	-				~	-																				1,381,72				2,5		
11	-				-	-				-	-	-					-	-														1.820.86				4.9		
112	-				-	•	-	•		-	-	-	-				-	•	-	-			-	-	-				-	-		2,323,39				6.4		
13	•			•	-	-	-			-	-	-						-														2,379,30			2	0,0	66	
114																																2,623,23				1.2		
115																																3,554,44				2,1		
16																																3,593,06				4,1		
17	-	- 7		-	-		-																									3,589,16			2	5,2	08	
18	-	1		•	•		•			_	•	•	-				-	-	-	-									-			3,593,58				5,3		
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orki ntanj	gi	1	ol	16			C	8	ı	pi	it	8	ıl	*																			9.80					

	-,,				,	
*Cost of	Houston	Home	Telephone	Co., Septemi	per 1915	
Plant o	of Home (Compan	y still in s	ervice		468,145.10

9/30/1919 \$4.810.385.40

Less Salvage from Sales and Displacements	\$891,595.84 136,616.04
Amount of Intensible Cenitel	\$754,979.80

Book figures do not measure present value or even original cost.

Property Accounts were not kept by exchanges prior to 1901 but only for
the Company as a whole.

Adjusted Valuation of Houston Home Telephone Company's 153 Properties.

We have modified the Company's book costs of the Houston Home Telephone Company's property purchased by The Southwestern Telegraph & Telephone Company in 1915, for reasons and on the basis hereinafter set forth:

Purchase of Houston Home Telephone Company.

In the year 1915, The Southwestern Telegraph & Telephone Company purchased, outright, the entire property of the Houston Home Telephone Company.

The terms of purchase, as given out publicly, were as follows:

- (1) A payment of \$194,000, in cash to cover the floating indebtedness of the Houston Home Company,
 - (2) A payment of \$131,614, for deferred interest.
 - (3) A later payment of \$34,126, for interest,
- (4) The purchaser assumed the outstanding bonded indebtedness of \$1,000,000.00.

If this \$1,000,000 bonded indebtedness be paid at its full, face value, the total purchase price of the property would amount to \$1,359,740.

Subsequent to purchase of this property, the The South-154 western Telegraph & Telephone Company sold all the real estate, the entire central station equipment, and all the substation equipment. The amounts received from these sales are eredited against the total purchase price on the Company's books.

The Company has retained and added to its own system the fol-

lowing parts of the Houston Home Company's plant:

- (1) Pole Lines.
- (Subscriber's drop wires.) (2) Aerial wire.
- (3) Aerial cable.
- (4) Underground conduit.
- (5) Underground cable.
- (6) Office furniture and fixtures.
- (7) Teams and vehicles.
- (8) Tools.
- (9) Miscellaneous supplies.

Each of these items has been appraised by the purchasing company, and the value, as appraised, has been credited on the Company's books as a net addition to the plant.

The sum of these so-called net additions to plant, and the amount received for the sale of the other portions of the property before mentioned, amount to \$636,161, which is \$723,579, less than the total purchase price. This difference, The Southwestern Telegraph & Telephone Company has added to its assets, and under the title of "Going Value."

It is neither our duty, nor our purpose, to offer any criticisms of this transaction, but to point out only wherein the Company's treatment of the finances involved is not allowable to fix values for the

purpose of rate-making.

The Houston Home Telephone Company was in the service of the Houston public, and its plant had cost a certain sum of money, which amount our report of 1914 showed to be about \$725,000, cost, now, with a then net value of \$665,000, after deducting depreciation, There were additional sums allowed for Working Capital, Going Value and other Intangibles, amounting to \$132,000. As a matter of fact, the Houston Home Company's books showed that they were practically without Working Capital in the form of cash, the total cash on hand at that time being \$1,039.

The Courts, Public Service Commissions and Engineering Appraisers have all agreed that the only property which can be considered in fixing values, on which to compute rates, is

be considered in fixing values, on which to compute rates, is that which is in the service of the public, and, further, that the value of these portions is fixed by its original cost, or, in some cases, by the cost of reproduction. The fact that a property which cost a certain amount of money is, later, resold for a greater amount does not affect the value of the property for rate-making purposes. The obvious justice and common sense of this view are apparent. If it were not so, there would be nothing to prevent the formation of a number of companies, which would successively buy a property from each other at an increase in price with each transaction, and, in this way, finally get to a cost of property, which, if used for rate-making purposes, would be an impossible burden on the public.

For these reasons, the only credit allowable to The Southwestern Telegraph & Telephone Company is for those portions of the Houston Home Company's plant which it has connected with its own plant, and which are and will remain in service. Also, the prices at which these portions of the Houston Home Company's plant can be credited to the assets of the Southwestern Telegraph & Telephone Company are the original cost prices of these portions, less Depreciation,

In The Southwestern Telegraph & Telephone Company's appraisal of each of the items of the Houston Home Telephone Company's equipment, the values were based on cost, less Depreciation. In order to constantly follow our method of taking the cost, new, and giving it its actual subsequent Depreciation, we have been obliged to use greater amounts for the cost value of the useful portions of the Houston Home Telephone Company than the Southwestern Telegraph & Telephone Company's books show. Our own prices are the original cost prices without any Depreciation, shown as net additions to The Southwestern Telegraph & Telephone Company's plant in 1916. These cost values are afterwards de-

preciated on the basis of their actual age and the rates of Depreciation which we have adopted, in order to determine their present values. This being the method pursued with respect to all the property belonging to The Southwestern Telegraph & Telephone Company, the equipment taken over from the Houston Home Telephone Company, and added to The Southwestern Company's plant, must be treated in the same manner. Otherwise, the results would be inconsistent and erroneous.

Those parts of the plant which have been sold, we have considered as never having been received by, or entered into the assets of,

the Company. So far as the public is concerned, these portions, previously existent, have been carried away and, therefore, have disappeared from any consideration at all. Whether The Southwestern Telegraph & Telephone Company made a profit, or experienced a net loss on the sale, is a matter that does not even remotely concern the public. The purchase of the Houston Home Telephone Company was a business deal which had nothing to do with providing telephone service, nor adding to it, and the only way in which this purchase can possibly affect the physical value of the property of The Southwestern Telegraph & Telephone Company is by the addition of those parts actually kept in Houston and still in use.

A copy of a letter from the Dallas office of The Southwestern Telegraph & Telephone Company to the Division Plant Superintendent in Houston, in which is shown the purchasers' valuation of each item of the Houston Home Company's equipment, is given on the succeeding page.

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Inventories.

Houston Home Telephone Company.

Dallas, Texas, Dec. 31, 1915.

Division Plant Superintendent, Houston, Texas:

In connection with the purchase of the Houston Home Telephone property, the following values were placed on the General Books for the month of September, and you will please originate a Work Sheet, Form SW-1077-E, using one column for each account. The charges are as follows:

122-01	Material and Supplies	25,229.85
211	Land	51,660.00
212	Building	53,623.37
221	Central Office Telephone Equipment	156,530.31
231	Station apparatus	1,860.02
232	Station Installations	174.28
234	Private Branch Exchange	659.79
235	Booths and Special Fittings	125.67
241	Exchange Pole Lines	59,118.56
242	Exchange Aerial Cable	84,604.41

244-14 242-24 245-15 245-25 245-35	Exchange Underground Conduit—Main Exchange Underground Conduit—Subsidiary Exchange Underground Cable—Main Exchange Underground Cable—Subsidiary House Cable	155,173.70 23,226.20 143,848.59 14,165.09 3,119.73
160		
251-11 251-21 252 261 264-01 264-03 265	Toll Poles Toll Cross Arms Toll Underground Cable Office Furniture & Fixtures Terms Other Equipment General Tools and Implements.	2,537.84 441.69 7,329.90 1,840.15 535.00 1,514.02 4,584.13
-	Cotal	795,902.30

After placing the above amounts on the Work Sheets you will post same to Form SN-34 in the month of September, interlining these amounts with the amounts already posted from your regular reports and not erasing old amounts to combine the two.

The net result of this purchase by The Southwestern Telegraph & Telephone Company is that, after allowing more than full value for the physical property, there is still an unaccounted-for sum of \$723,579. This amount The Southwestern Company has written up as an "Intangible Value."

That an "Intangible Value" has accrued by putting a competitor out of business, prior to asking for a raise in rates, is probable from a general financial and business standpoint, but no such sum of money can be considered as part of the Capital Account on which

the subscribers must pay an annual return.

The following table shows each item now remaining in Houston as a useful portion of The Southwestern Company's plant, the valuation placed on it by the Company and the cost, new, valuation which we have given them. Our own figures are used in the computations of value which occur later in this report.

Table of Houston Home Company's Equipment in Actual 162 Service.

Item.	Cost value new.	S. W. T. & T. Co. valua- tion.
Pole Line	\$68,000	59,118.56
Aerial Cable	81,738 #	84,604.29 *11,825.41
Underground Conduit	122,772	178,399.90
Underground Cable	116,668 #	181,133.41 2,819.76
Central Office Equipment	a a	158,530.31 107,283.37
Total plant		
Furniture and Fixtures		#
Tools and Store Equipment Stable and Garage		#

- 163 Testimony in Support of Assignment of Error No. 2, Relating to the Division of Long Distance Tolls.
- 164 H. B. Copes, a witness for plaintiff, who was first duly sworn, testified as follows:

Direct examination.

Questions by Mr. Duls:

Q. What is your name?

A. H. B. Copes.
Q. Where do you live, Mr. Copes?
A. Dallas, Texas.
Q. What business are you in? A. I am in the telephone business.

Q. With what company?

A. Southwestern Telegraph and Telephone Company. Q. What position do you hold with that company?

A. I am Superintendent of the Contract Department for the State of Texas.

Q. Superintendent of the Contract Department for the State of

A. For the State of Texas, yes, sir.

^{*}This item is not included in letter fixing book values. Included in S. W. Co. book values.

ISee "Aerial Wires."

eThis item is not in our cost values new.

Q. In a general way, what are the duties of your position?

A. Well, the larger portion of my duties are handling the arrangements or traffic agreements and relations with the connecting companies in Texas, that connect with our system. 165

Q. By traffic arrangements, you mean arrangements in-volving the connection of the lines of the company with the independent lines?

A. Yes, sir, interchange of the telephone business between these

companies.

Q. Do the lines of the Southwestern Company connect with any of the independent companies?

A. Yes, sir.

Q. About how many independent companies are there that con-

nect with the Southwestern Company?

A. Why, there are something like between five and six hundred companies; Mr. Scott meant exchanges a while ago, some of these companies have more than one exchange, but the companies, the number of companies is between five and six hundred.

Q. Well, do you mean that the Southwestern Company connects

with the five hundred or six hundred independent companies?

A. Yes, sir. When I say "companies," I mean companies and

individuals—some of these lines are operated by individuals.

Q. Yes, Well, now, Mr. Copes, into whose boards, say, the 166 lines of the Southwestern company go, does the Southwestern

company connect with?

A. Why, I haven't figured that out exactly by companies. We go into 362 exchanges. Now, some of those exchanges are owned by the same company-for instance, the Gulf State Telephone Company, that is a large concern, they have eight or ten exchanges that we go into.

Well, approximately how many exchanges does the

Southwestern connect with?

A. Well, I can tell you exactly, 362—that is, that we go directly through the toll board, where they handle our business just the same os the Houston exchange does our toll line.

Q. Those are exchanges which the Southwestern company does

not own?

A. Yes, sir.

Q. In which it has no interest and over which it has no control?

A. No, sir.

Q. Several months ago we asked you to go into the matter and find out accurately just how this 25% charge we allow the Houston exchange compares with the amounts paid by other companies among themselves for the same services. Did you make in-

vestigations along that line? 167

A. Yes, sir.

Q. Well, how did you select the exchanges?

A. Why, I took-I started at the top, with the largest exchange, and went on down the line as to size, down.

Q. Well, did you go around-A. That is, as to exchanges.

You did not go around and just select the exchanges that you wanted to select and used those in your study?

A. No, sir, I used no-didn't pick them at all. Q. How long were you in getting the facts? A. About five—between four and five weeks

Q. Does that include getting the facts and compiling your figures?

A. Yes, it was about six weeks altogether.

Q. Well, did you have any trouble, Mr. Copes, in getting into

the books of these independent companies?

A. No, I didn't have any trouble at all; I had made this study before for the Houston company and the San Antonio and Ft. Worth companies, and they knew-I did the first time have a little trouble in convincing them what my figures were for, these little

fellows sometimes don't like to tell all their business-but

this time I didn't have any trouble at all 168

Q. In other words, they were willing to trust you so far as getting information about that business was concerned?

A. Yes, sir.

The Master: Have you had any personal transactions with our mutual friend, Mr. Bill Medley, at Conroe?

A. Not personally. I got along very well with him. Q. For what time did you pick out the figures?

A. For the month of September 1919 because it was the last month prior to the date of making the study, and I thought the record would probably be fresher and in better shape.

Q. Are you familiar, Mr. Copes, with the credit that our toll line

system allows to the exchange here in Houston in setting up a state-

ment of revenues and expenses?

A. Yes, sir, I am.
Q. What do we ordinarily allow our exchange business?
A. Twenty-five per cent on outward business.

A. Twenty-live per cent on outward business.

Q. That is, in all exchanges which this company owns?

A. Yes, sir.

Q. Now, why do you allow a per cent only on outward business?

A. Why, because we don't check the exchanges, we don't 169 check the inward business.

Q. Why don't you check the inward business?

A. Because it takes up the time of the operators, and by not checking it, and making our payment to the exchange on the outward business, we get a larger use of our toll lines and can furnish a better service to the public.

Q. What do you mean by "checking?"

A. I mean making a ticket on call. By that method we avoid making a ticket on an in call.

Q. It saves bookkeeping, in other words?

A. It saves bookkeeping, but the principal point is it saves the operators' time in actually handling the calls.

Q. By that method, just for the information of His Honor, explain how a call would be put through from Houston to Dallas?

A. Would be put at this end?

Q. Would be put at this end, outward call, yes, sir.

A. Well, the call would be placed with the recording operator. who would make the ticket on that call, the ticket would be passed to the line operator here in Houston, who would put up the connection operator in Dallas, or line operator without involving the serv-

ice of another operator, except the local exchange operator terminate that call at the Dallas subscriber's station without a 170

Q. That is, the operator in Dallas does not make any record of the call?

A. No record whatever.

Q. A record is made here in the Houston office?

A. Yes, sir. Q. Now, in dealing with other exchanges, do we have the same arrangement-I mean both with independent exchanges,-the arrangement the Southwestern Company has with independent exchanges?

A. Why, we have-in order to enlarge that operating method we have arranged with, well, I would say with the office managers of practically 75% of our connecting exchanges to operate on that basis.

Q. What basis? A. What we call 103 Operating basis, or method, or single ticket method of operation.

Q. Well, I want to know primarily what per cent do you allow

these independent people? A. Well, our contracts with them are on the basis of 121/2 % on

out business and 12½ per cent on in business. Q. Did you ever make any effort to get you to pay them 25% on

outward business.

171 A. Well, we can't—it resolves itself down to 25%, but the way we do it is this: It is rather unfair to a very small exchange to put it on the 25% basis straight, because of the fact that, for the same reason that the outward business of the large exchanges, the outward business is greater than the inward, the inward business in a small exchange is necessarily greater than the outward, and if we paid the toll commission on outward business without recognizing that fact, we would be doing an injustice to the connecting man. Now, we get around that by taking the actual commissions paid for the last period, we will say six months, or twelve months, that the inward business was kept and apply that amount of money on both the in and out against the outward business; and this arrangement I say I have made with practically 75% of our connecting companies.

Q. Well, now, Mr. Copes, you have testified that the Southwestern allows its own exchanges 25% of the outward revenue and indepen-

dent companies 121/2 and 121/2?

A. Yes, sir.
Q. What is this allowance for, what is it made for? A. It is for originating business, terminating the business, collecting for the originating business and performing service and operating for both the in and out business. Now, I might state right here, in order to clarify the thing, that in other bus-iness with our connecting exchanges, we have arrangements 172

by which we pay them for switching through business on approximately the same basis as we allow our own exchanges for the same service.

 Q. Well, that is switching charge?
 A. Yes, that is entirely separate from the originating and terminating basis.

Q. All right. Now, in getting up your figures, did you find out what was being paid for every call handled by those exchanges?

A. Yes, I had to knowing that numbers of these independent companies had different percentage rates or commissions, I had to estimate on the unit, which, of course, could not be anything except the individual toll call.

Q. In your judgment that is the best basis on which to make a study of this question?

A. It is the only basis you can make it on, there is bound to be a

unit, and the only unit in the toll business is the call.

Q. Have you any figures showing what was paid the Houston exchange for services rendered to long distance lines? 173 A. Yes, sir. (Handing counsel a paper.)

Mr. Duls: We offer that and call it Exhibit No. 47.

(Plaintiff's exhibit No. 47 was received in evidence and marked Plaintiff's Exhibit No. 47, Witness Copes, and is filed herewith.)

Q. Mr. Copes, what is the amount of total outgoing toll business of Houston for the month of September last year?

A. It was \$36,281.00.

Q. And 25% of that is what?

A. \$9,070.25.

Q. That is what the local exchange here was allowed for handling the toll business?

A. Yes, sir, for the month of September?

Q. Now, what was the total number of outward calls during that month?

A. 33,846.

Q. And the number of inward calls?

A. 26,917.

Q. Why is there a difference in that, why are there more outward calls than there are inward calls in an exchange like Houston? 174 A. That is always true of the larger centers.

Q. Well, explain that a little bit so we will understand

that.

A. Well, it is due almost entirely to the fact that the larger business concerns, wholesale houses, distributing concerns, have their offices in the larger cities, and their traveling men and their customers, in placing telephone calls, place them collect, which makes it an outward call at Houston.

Q. In other words, Mr. Copes, if a man came down here, say from Conroe, and then called up his family in Conroe, that would be an

outward call?

A. Out of Houston, yes, sir.

Q. Yes. Suppose a man in Conroe called up a man in Houston and asked that the call be reversed?

A. It would be an outward call in Houston.

Q. Why?

A. Because the money would be collected in Houston.

Q. Now, you are allowing Houston 25% of the outward toll revenue?

A. Yes, sir, that is correct.

Q. Although Houston collects more than half-I mean although Houston has a larger number of outgoing calls than it has inward calls?

A. Yes, sir, very largely more. 175

Q. Is that allowance of 25% favorable or unfavorable to

an exchange like Houston?

A. It is very favorable to any large exchange—not only Houston, but to any large exchange.

Q. It is at least better than 121/2 out and 121/2 in?

A. Oh, yes, it is much better.

Q. Now, how much does the Houston exchange receive per call for handling the long distance business?

A. The month of September, 1919—the month I made the study—

they received 14.9 cents per call.

Q. That is both ingoing and outgoing calls?
A. That is the total calls, divided by the revenue.
Q. The total number of calls?
A. Yes, sir.
Q. Now, Mr. Copes, you said you made a study of all the Southwestern Company's toll lines connected with independent exchanges?

A. Yes, sir.
Q. Have you an exhibit connected with that study?

A. Yes, sir. (Handing counsel a paper.)

Mr. Duls: We will offer that as Exhibit No. 48.

(The paper was thereupon received in evidence, marked Plaintiff's Exhibit No. 48, Witness Copes," and is filed here-176 with.)

Q. Do these independent exchanges that connect with the toll lines of the Southwestern Company render the same service to the Southwestern long distance lines that the Houston exchange renders?

A. Just exactly.

Q. Just exactly the same service?

A. Yes, sir.

Q. Now, this exhibit takes—or makes a study of the situation, where the long distance lines of this company go into the switchboard of local independent exchanges?

A. Yes, sir.
Q. How many exchanges is the Southwestern Company connected with, according to this exhibit?

A. 362 in the month of September. That number varies from time to time, of course, as exchanges are established or abandoned.

Q. What were the total number of outward calls in those ex-

changes?

A. The total calls as handled by those people in September 1919 was 286,219 dollars.

Q. No-

177 A. I mean figures, 286,219 calls, with a revenue of \$133,-

Q. Well, now, what were the number of inward calls?

A. The number of inward calls on that exhibit was estimated, as I note at the bottom, as we don't-the inward calls were not checked at probably seventy-five per cent of these exchanges, but I base the number of inward calls on the actual calls shown in the study that I made in January 1918—the same study—I put the same percentage of in and outward business, which would not vary one per cent now.

Q. Well, there seems to be more inward calls than outward calls

with those small exchanges?

- A. Yes, sir, I explained that a while ago; that is necessarily so. Q. Well, did you estimate the total revenue—I notice there is a blank there?
- A. I did not mean to do that, as our commission's based on the outward business.

Q. This exhibit covers the same month of September, 1919?

A. Yes, sir.
Q. What did you find as the average amount per call paid by the Southwestern Company to these local exchanges?

A. It is 4.13 cents per call for that month.

178 Q. In other words, the Southwestern Company pays the independent exchanges with which it connects 4.13 cents per call, and pays Houston 14.9 cents per call?

A. Yes, sir, that is correct.
Q. Did you examine any other toll systems in the state besides the Southwestern Toll System?

A. Yes, sir, I examined the four largest companies outside of the Southwestern Company.

Q. What are those four largest companies?

A. The West Texas Telephone Company, with headquarters at Brownwood; the Gulf States Company with headquarters at Tyler-

Mr. D. A. Frank: That is Judge Lynden's company.

A. Yes, sir. The San Angelo Telephone Company, with headquarters at San Angelo; and the Texas Long Distance Telephone Company with headquarters at Waco.

Q. Have you an exhibit making the study of those companies?

A. Yes, sir. (Handing paper to counsel.)

Mr. Duls: We offer that as "Plaintiff's Exhibit No. 49."

(The paper was thereupon received in evidence marked "Plaintiff's Exhibit No. 49, Witness Copes," and is filed herewith.)

Q. Mr. Copes, in your Exhibit No. 48? 179

A. Which one is that?

Q. That is the second one.

A. The second one?

Q. Yes, sir. You showed that we are paying the independent exchanges 14.13 cents per call.

A. Yes, sir.

Q. And in the previous exhibit you show that we are allowing Houston 14.9 cents per call?

A. Yes, sir, that is correct.

Q. From that it doesn't seem that the Southwestern Company is overreaching the Fort Worth Exchange, does it? I mean the

Houston Exchange?

A. No, not necessarily. The large exchanges are entitled to a greater earning per call on the toll because of the larger proportion of long haul business, that is what makes the difference in the commission earnings per call.

Q. Now, are there any limitations upon the amount that we pay the independent companies for handling our long toll business?

A. Yes, sir, in our contracts that we make with the independent companies, we limit the commission paid to not to exceeding 10 cents per call.

Q. What do you mean by that?

180 A. Well, I mean that on any one call we won't pay to exceed 10 cents on any one call.

Q. There is no such limitation as that on the amount that we will pay or allow the Houston exchange?

A. No, sir, it is figured straight. Q. Now, we were talking about Exhibit No. 49?

A. What is that, my number 3, isn't it?

Q. Yes, your number 3. In this Exhibit, have you included any exchanges which are owned or controlled by these four independent toll line systems which we have in the first column?

A. No, sir, I haven't. Q. You have included then only exchanges which are independent of those toll lines?

A. Yes, sir, entirely so.

Q. So that this exhibit shows what are paid by independent people dealing among themselves?

A. Yes, sir.
Q. And at arms length?

A. Yes, sir. These exchanges, I might say, bear the same relation to these four poll line companies that the 362 exchanges that I have shown on the other, bears to the Southwestern toll lines.

Q. And these exchanges perform the same services for these long distance lines as Houston does for the-

181 A. Yes, sir, absolutely the same.

Q. In the first column you have the number of exchanges connected with these long distance lines?

A. Yes, sir.

Q. How many exchanges are connected with the West Texas Telephone Company?

A. 36.

Q. I notice you have Brownwood after the West Texas Telephone Company?

A. That is the headquarters of the company. I mentioned that

when I named the companies awhile ago.

Q. Then you have made this study on the same basis that you have the study of the Southwestern's payments to the independent exchanges?

A. Yes, sir.

Q. What did you find that the West Texas Telephone Company pays per call to the independent exchanges connected with these long distance lines?

A. 3.7 cents per call.

Q. What do you find that the Gulf States Company pays? A. 2.8 cents.

Q. The San Angelo Company?

A. 5.6 per call. Q. The Texas Long Distance Telephone Co.?

A. 5.1 cents per cal!.

182 Q. Now, what is the average payment by these four largest independent telephone companies to the independent exchanges which connect with them to handle their long distance business?

A. 4.2 cents per call.

Q. That figure compares with the 4.1 cents per call paid by the Southwestern to its independent exchanges?

A. Yes, sir.

Q. And with the 14.9 cents per call paid the Houston Exchange by the Southwestern-

A. (Interrupting.) Yes, sir.

Q. Toll System. Are there any number of independent exchanges in the State?

A. Yes, sir, over 700.

Q. Over 700 independent exchanges?

A. Yes, sir. Q. Have you made a study with reference to these independent exchanges?

A. Well, not all of them. I made a study on 8 of the largest independent exchanges, starting at the top and going on down. based on the size of the City.

Q. Based on the population?

A. The population of the City in which the exchanges are operated, yes.

Q. How many of them did you take? 183 A. I took the 8 largest.

Q. You have the exhibit on that?

A. Yes, sir.

Mr. Duls: We will introduce that or offer that as Plaintiff's Exhibit No. 50.

(The paper was thereupon received in evidence marked "Plaintiff's Exhibit No. 50," and is filed herewith.)

A. (continued:) Now, you want No. 4 first?

Q. Yes, I want the one that is independent Southwestern business?

A. Strictly independent business.

Q. And all of this is your work, Mr. Copes?

A. Yes, sir, I got the records off, right off of the original records of all these companies personally.

Q. I believe you said it took you something like five or six weeks

to get these computations?

A. Yes, sir. Q. Now, what does this Exhibit show?

A. This Exhibit shows the per call commission earnings by the eight largest independent exchanges in Texas for handling long distance business other than long distance business of the

184 Southwestern Telegraph & Telephone Co.

Q. Well, do I understand that this is the reverse of the

exhibits that you have previously introduced?

A. Yes, sir, the previous exhibit showed the toll line companies payments to the various exchanges and the Southwestern Company's payments to the various exchanges with which it connects but does This exhibit shows the earnings of the exchange for pernot own. forming and operating and collecting services for the toll line companies connected with it.

Q. What they receive on an average?

A. Yes, sir.

Mr. Duls: Your Honor, I want to state that if there are any questions that you want to ask as we go along, that Mr. Copes will welcome the interruption, and anything that we can explain, we want to explain.

Q. Suppose we take the Denton exchange there. Now, that, as I understand from this exhibit, has four independent lines which go into the switch-board at Denton?

A. Yes, sir, that is correct.

Q. And then you have found the total outward business and the total inward business and shown the total amount of commissions received in the next to last column and then the amount received per call?

185 A. Yes, sir.

Q. What did the Denton Exchange receive per call?

A. 3.1 cents per call.

Q. And what did you find as the average amount received by these 8 independent, largest independent exchanges from independent companies, that is, companies other than the Southwestern Company, for handling their long distance business?

A. 7.1 cents per call. That is the average of all of them.

Q. Well, then, this exhibit shows that there is not a single independent exchange in the State of Texas, or rather it shows that no one of these largest independent exchanges receive as much as the Houston Exchange for handling that business?

A. Yes, sir, that is correct, by nearly 4 cents a call.

Q. By nearly 4 cents?

A. Yes. Q. Now, this exhibit excludes the business of the Southwestern Toll System. Have you an exhibit which includes that business?

A. Yes, sir, I have prepared another exhibit on these same towns, I have prepared another exhibit which includes all business handled by them, including the Southwestern.

Mr. Duls: We will offer that as Plaintiff's Exhibit No. 186

(The paper was thereupon received in evidence, marked "Plaintiff's Exhibit No. 51," and is filed herewith.)

Q. Now, including the business of the Southwestern Company, what do you find is the average amount per call received by these 8 large independent exchanges?

A. 4.4 cents per call.

Q. That compares with what figure allowed, excluding the com-

pany's business'

A. That don't compare exactly, Mr. Duls, with any of the rest of them, for the reason that at Dallas, Waco, Temple, Sherman and Denton, the Southwestern Company operates its own toll, they have their own operators, and the local exchange simply does our billing That is the reason that per call earning is and collecting for us. low. I simply prepared that to show what it would mean, including all business handled by these companies.

Q. That is including all the long distance business that goes into

these exchanges?

A. That goes into these exchanges.

Q. And is this based on the outward and inward business also? 187

 A. Yes, sir, that is including the per call earnings.
 Q. Now, have you made a study of the amount received by the five largest independent exchanges connected with our toll lines?

A. The five largest that handle ours directly, doing all the operating, collecting, bookeeping, etc., just the same as the Houston Exchange does for the Southwestern Company's toll line.

Q. Well, let's have that Exhibit, Mr. Copes.

Mr. Duls: Now, we offer this in evidence as plaintiff's Exhibit No. 52.

(The paper was thereupon received in evidence, marked, "Plaintiff's Exhibit No. 52," and is filed herewith.)

A. Now, I might explain that these figures here are absolutely

comparable with the Houston figures.

Q. In other words, these four exchanges, independent exchanges which perform the same services for the Southwestern Lines as this Houston Exchange performs for the Southwestern lines?

A. Yes, sir, covering Southwestern business only.
Q. Now, take the Texarkana Exchange and explain just how you

arrived at the amount which it received per call?

A. Well, I arrived at it just exactly the same way, Mr. Duls, that I did all the rest of them. The only difference 188 in this Exhibit is it includes only Southwestern business. The previous Exhibit included Southwestern and independent busi-

Q. Well, what amount did you find the Texarkana Exchange received from the Southwestern Company for handling the South-

western's?

A. Eight cents per call.

Q. What does Greenville receive?

A. 5.2 cents per call.

Q. Brownwood?

A. 11.9 cents.

Q. Bryan. A. 10.8 cents.

Q. And Gonzales?

A. 7 cents a call; an average of 7.3 cents per call for the five exchanges.

Q. Now, you say that figure is absolutely comparable with the 14.9 cents which Houston receives for handling the same business?

A. Yes, sir, it is.

Q. Now, have you an exhibit which summarizes in a general way what you have been testifying to?

A. Yes, you want to introduce that?

Mr. Duls: Yes, we'll introduce that as Plaintiff's Exhibit 189 No. 53.

(The paper was thereupon received in evidence, marked, "Plaintiff's Exhibit No. 53," and is filed herewith.)

Q. If you have figured an average payment per call on these other exhibits, there will be some cases where the payment will be above that average and some cases where it will be below it?

A. Oh, yes, necessarily so.

Q. Now, I wish you would explain just what this exhibit shows

in a general way, and let us follow you on that, Mr. Copes?

A. This exhibit is intended to show in a short, clear way, first, the highest per call payments by different companies under different conditions.

Q. Both independent and the Southwestern?

A. And the Southwestern, yes, sir. Now, this exhibit shows that the highest amount paid per call in the State of Texas, by the Southwestern Telegraph & Telephone Company, is to the Brownwood, Texas, Exchange, 11.9 cents per call.

Q. Well, now, is that figure comparable to the payment that is made here at Houston?

A. Yes, sir.
Q. Well, then, you mean, excluding Houston, this is the highest payment that the Southwestern Company makes per 190 call?

A. I said, to an Exchange not owned by the Southwestern.

is what I meant.

Q. All right, to an exchange not owned by the Southwestern?

A. Yes. Q. What does the Texas Company pay?

A. You see, I haven't got any figures on these independent companies, except to exchanges not owned by them. All these figures are on that basis, Giddings, 9.5 cents per call. The West Texas Company at Mercury, Texas, have 9.7 cents per call. The Gulf States Telephone Co. at Henderson, Texas, 4.1 cents per call. The San Angelo Telephone Company at Ozona, Texas, 8 cents per call.

Q. Now, what is the highest average call received by any large independent exchange from independent local exchange systems?

A. You mean from long distance independent systems? Q. Yes. A. Dallas, Texas, 10.1 cents per call.

Q. Does your Exhibits show that the average per call made by the Southwestern to independent exchanges is 4.13 cents? 191

A. Yes, sir, one of my exhibits.

Q. Well, what does that compare with, Mr. Copes?

A. That compares with Houston. Those exchanges perform exactly the same service to earn that amount as Houston performs to earn 14.9 cents.

Q. And it compares also with the payment made by the four large independent toll line companies to exchanges not owned by them?

A. Yes, sir.

Q. How much was that amount?

A. 14.9 cents.
Q. Well, the amount paid by the four largest independent companies to the exchanges not owned by them?

A. Yes, 4.2 is right.

Q. Well, do I understand you to testify that the highest received is 14?

A. Yes, sir, that is correct.

Q. And that compares with the 14.9 cents which is allowed Houston?

A. Yes, sir.

Q. When the Government took control of the properties, there was some change made in the arrangement which the company had with the independent companies, I believe. What was that change?

A. Why that change as far as the local exchanges that we 192 connected with, didn't affect it. We were already on the same basis as was fixed by the-I suppose the Board at Washington fixed it, but we all changed our arrangements from a switching charge basis where lines went into our exchanges to an originating toll basis. That applied on other toll business and also to business originating in our exchanges, going over connecting lines, that was changed to 25% on the outward business and made uniform for the whole country.

Q. You changed it to the same thing that existed here in Hous-

ton?

A. Yes, sir. Q. Now, did the Texas Telephone Company in 1919, have a dif-

ferent arrangement?

A. Yes, sir, they had many different arrangements, and I found in making this last study that they had changed to a uniform basis. I have a detailed list here of all their exchanges, which I just made for my own information, but they changed to the same proposition that we were, they made it 121/2 and 121/2 per cent, and pro rated it on a basis of an in and out basis, just the same as we do.

Q. In other words, that company thought that was a fair way to

handle that proposition

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A. Yes, sir, they evidently did. Q. Did the San Angelo Telephone Company change theirs to the same basis?

A. Yes, sir, they put theirs all on a 25% basis. Q. Now, Mr. Copes, this Exhibit No. 53,-

A. That's my number what?
Q. Your number five.
A. The last one is it?
Q. Yes, your last exhibit. Just to sum the thing up, does that exhibit show that the Southwestern Company pays the Houston Exchange three and a half times as much as it pays independent exchanges for doing the same thing that the Houston Exchange does?

A. Yes, sir.

Mr. Duls: I think that is all.

Cross-examination.

Questions by Mr. Howard:

Q. Mr. Copes, a man familiar with this long telephone operation, you wouldn't think that a local exchange should pay more, or you would think that a local exchange should receive for handling these telephone calls at least what it cost to handle them, would you not?

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A. Yes, sir, without any question. Q. Now, did I understand you to say awhile ago that where you deal with independent companies, make this arrangement for handling your long distance tolls, I thought I understood you to say that you allowed them 12½% on outgoing calls and 12½% on incoming calls, instead of the 25% on merely all outgoing calls?

A. I said, Mr. Howard, that our contracts with them provided for that percentage but in order to work it out in a practical way, we had in order to put into effect what I explained awhile ago, this single ticket method of operation and in order to improve the toll service, which is the only reason we have for doing that, to decrease the bookkeeping, that we had figured out a sort of composite percentage based on the actual in and out business and taking 121/2 % on that actual in business and actual out business, and applied that sum against the outward business, which may mean a 22% or it may mean 26%, or 27% or 28%. Now, for instance, you take a town like Bryan; they have the State University there, the A. & M. College, and you find in that town that the inward business is a great deal larger than the outward business, because people put in calls for their children there and pay for it back home, and Brownwood is a town where the outward business is considerably

195 greater, and the inward business is greater. You will find that true whenever an exchange gets below the average sized exchange, that is generally true, you will find the inward business

exceeds the outward.

Q. Did I understand you to say ahwile ago that a collect message was treated as-for instance, if I was to send a message from here to San Antonio collect, would that be treated as an incoming message?

A. That would be-a message is received as outward message

business at the point at which it is paid.

Q. At which it is paid? A. Yes, sir, that is correct.

Q. That is what I understood you to say. And I suppose that, particularly in a City like this, there would be about as many collect calls sent in here as there would be sent out?

A. Well, I will say that I believe that Houston, probably Houston-It differs, the excess outward calls over inward calls in Houston would be as great as it is at any point in Texas, I think.

Q. What? A. The excess of outward calls over inward would be as great, or

greater than at any point in Texas.

Q. What I don't understand, is this last column here?

A. Which exhibit have you there?

Q. No. 53. If you deal with these independent exchanges out at these little towns or in large towns for that matter and you pay them on a basis of 121/2 cents for outgoing calls and 121/2 cents for incoming calls, you will approximate, by that method, I understand, about 25 cents each?

A. Yes, sir, that is right.

Mr. Duls: You mean-

Q. For instance, this 11.9 cents, and all the way down. would represent practically 25% of the call-?

A. No, it won't in all cases, some of these people are not on a

25% basis; all of those companies are not.

Q. Well, either on a 25% basis or practically on a 25% basis? A. I cannot give you the exact figures here. The West Texas Company is on practically that basis. The Gulf States Company over here in East Texas, they have a great many different, some of them 25% on an average, some 12½ and 12½ and here's one 20 and 20 and here's one 15 and 10. They have no standard. And you will notice their average is very low. They have got a lot of little bits of exchanges over there in East Texas, that practically all of their business is within a radius of 25 to 30 miles.

Q. Well then, if Houston gets 14 cents instead of that, that is due to the fact, is it not, that Houston is a large City

and has the advantage locally of originating long calls?

A. Yes, sir, that is true.

Q. And it costs Houston more to handle calls too, does it not,

than it does little exchanges?

A. It costs more to handle a long haul call, Mr. Howard, than it does a short haul call for the reason that it requires more of the operator's time to follow up that call and build up a circuit, and it requires more of her time to handle it.

Q. Yes, first, I would like for you to explain, if Mr. Jones over at San Antonio at Crockett 744 wanted to talk to me at my office here at Preston 744, just trace exactly the manner of handling that call,

will you please?

A. Why, this subscriber at San Antonio would place his call at his telephone. He would get our recording operator. She would ticket the call and pass it to the line operator. There is a through circuit between San Antonio and Houston. She would call directly and get our toll operator here and as we are operating 103 between those points—

Q. Let me interrupt you. When you get your toll opera-

198 tor here, you mean an exclusively toll operator?

A. Yes, sir.

Q. That handles nothing but long distance tolls and whose salary is not carried into the expenses of the local exchange at all?

A. Yes, sir.

Q. Then what happens?

A. She gets the call and calls directly to the local subscriber and completes it without making any ticket whatever.

Q. Does what?

A. She passes the call directly through the local board to your station without making any ticket at all.

(By Mr. J. D. Frank:)

Q. In other words, Mr. Copes, the San Antonio operator gets in touch with the Houston toll operator and says "San Antonio is calling Preston 7, 4, 4?"

A. That is correct. She gets that number direct.

(By Mr. Howard:)

Q. Now, the toll operator gets that number and then she passes it on then to a local operator, does she not?

A. Well, necessarily, any local call involves the use of a local operator,

Q. That is what I say, she passes it to a local operator?

A. But when that is done, she just makes the connection, and the toll operator in San Antonio is in direct communica-199 tion with your telephone.

Q. The toll operator here at Houston calls for Mr. Howard's

number, just like a subscriber?

A. Just like a subscriber, and you are given direct connection with the San Antonio operator.

Q. Yes, sir, I am connected. The toll operator switches it?
A. Yes, sir, just in the same way as a local subscriber would call another local subscriber in Houston, just exactly. That is, she leaves the thing and is done with it. The operator in San Antonio completes the call.

Q. That necessitates the tax of one local call to complete that

long distance call?

A. Yes, sir, just time enough to plug into that switchboard like she would on a local call. She has nothing else to do.

Q. Then, when the conversation is over, she has to make the disconnection when they are finished talking?

A. Yes, sir, the disconnection is made by the San Antonio opera-

She just gets through with the conversation.

Q. Now, if she calls my number and reports that I am over at the Court House or slept a little late and haven't gotten down to the office, then later on what is done in that event?

200 A. Well, a delayed call-I can't be absolutely certain about that. I am not a traffic expert enough to tell you about that, but I believe the San Antonio operator follows that call up. That is my understanding.

Q. Then she tries my office again, that requires a repetition of

this same process, she calls up my office the second time?

A. Yes, sir.

Q. And maybe the third or the fourth time, trying to locate me?

A. Yes, sir.

(By Mr. J. D. Frank:)

Q. That is, the toll operator calls his office the third or fourth time?

A. Yes, sir, not the local operator; the local operator, she has forgotten all about that call, she don't know anything more about it.

Q. Let's see, how that can be. Once they call my office and I am not in, and that is reported, and the receiver in my office is hung up and there is a disconnection that at the Central office. Now, in order to get my office again, the local operator must be called upon to call my office again?

A. No, the local operator in Houston don't do anything at all further about it. She hasn't got anything more to do with that call,

because it will be followed up by the San Antonio operator, 201 the originating point of that call.

Q. You don't keep that plug in my office all the time? A. Sir?

Q. You have to keep a direct connection with my office at all?

A. No, no, they don't keep that line up until you come in. That line would be used a hundred times between then

Q. Then, how are they going to keep-

A. She does when the San Antonio operator comes back again. She puts up the connection, just like locally here in town.

Q. She repeats that as many times as it is necessary to do it?

A. Yes, sir.

Q. And there might as many as six or eight local calls attach against this exchange in order to handle one long distance call?

A. Yes, sir, but on that call, if you are not in, they would keep right after you until they completed the call, the San Antonio operator would.

Q. How is that?

A. I say, the San Antonio operator would keep on calling you and probably would ask for a report on it and we would collect the report charge, and if the call was reversed here, Houston would

get credit for it, and the reverse would be true if the call originated in Houston.

Q. Now, while San Antonio is making six calls and taxing the service with six calls, a local operator is taxing this exchange with the service of six calls, what function does long distance perform?

A. Why, the San Antonio operator is trying to complete that call,

the San Antonio toll operator.

Q. Then, to have quite a number of operators—Here is the idea, does the long distance toll or long distance service require more operators than it would if it could get, could eliminate the thing of you not being able to locate me all the time, they have to keep a lot of excess operators on there to take care of that service that turns out to be fruitless?

A. Of course, Mr. Howard, if we always had ideal conditions to

work under, we could do away with a lot of people.

Q. They do have to keep a lot of operators, just the way they did in the old days, start a call at San Antonio with the operator there and 'phone in here to Houston and send a message out around to the country, they are trying to locate the party, if they couldn't locate the party, she would have to call over again and that, of course, requires a great many more operators?

203 A. Yes.

Mr. Duls: What kind of operators, judge?

Mr. Howard: These would be toll operators. There would be no local exchange operators at all.

Q. So then, you introduce into the service the local exchange, now, a service by means of which there are a great many local calls in

order to complete a long distance call?

A. Well, Mr. Howard, as far back as the telephone business started, there has always been that necessity in any town big enough to have a separate toll board. The conditions haven't changed at all in that respect.

Q. You misunderstand me, Mr. Copes. I am not suggesting that we should go back to primitive conditions. I am merely trying to

show that this advance, while it is convenient, that it is in pursuance and in furtherance of the toll service, and that it imposes a very considerable labor upon the local exchange?

A. The completion of a toll call has always involved the use of

a local exchange.

Q. Of course it does.

A. In any place big enough to have a local exchange, the only place you would use a messenger service to send out 204 would be in a little town where there wasn't any local ex-

change?

- Q. I understand that, of course, that is true, but it is true that this completion process is a thing that means a very considerable burden upon the exchange. It takes a good many calls. Now, can you, for instance, can you tell me, how many calls you had in Houston during the month of September, long distance calls?
- A. Yes, sir, my first exhibit there, Exhibit No. 47, showed that. Q. Now, have you any kind of a record that will show about how many local calls will be involved in sending the outgoing message about the average number of local calls necessitated by sending one outgoing toll message?

A. No, sir, I haven't made any study on that, but I could doubt-

less get that information for you, we have it.

Q. You haven't made any study on it?

A. No, sir, I haven't personally.

Q. Now, another thing, Mr. Copes, what is the largest city in Texas in which you have, in which you deal with a local exchange and make this arrangement?

A. Dallas.

Q. What company is there in Dallas?

A. The Dallas Telephone Company. Q. They have another telephone in Dallas besides this con-

205 solidated phone service, have they?

A. No, sir, that is the only one, that is the exchange that was formerly the Southwestern Company's exchange and the Dallas Automatic Telephone Co.

Q. Well, at the present time, it is the Southwestern Exchange? A. No, sir, it is the Dallas Telephone Company.

Q. But it is the Southwestern Tel. & Tel. Co. property?

A. Well, it is controlled by them, yes, sir.

- Q. Well, I mean some company that you don't control or don't
- own.

 A. Well, the largest would be Waco.

 Q. Waco is a town of how many people?

Q. What company operates there?
A. The Texas Telephone Company.
Q. The Texas Telephone Company has a long distance line running into Waco, too, doesn't it?

A. No, sir, the Texas Telephone Company does not own any toll

Q. Don't own any toll wire?

A. No, sir. There are other toll lines other than the Southwestern lines that enter the exchange.

Q. What others?

A. Why, the Texas Long Distance Company own the toll lines going into Waco. There's three lines connect at Waco, 206 the Southwestern Lines, the Texas Long Distance lines, and the Waco & Mooreville Telephone Co., to a little town out there a few miles.

Q. Then how far, can you tell me, does any independent line

carry messages out of Waco?

A. Why, about the longest haul they can have out of Waco on their own lines would be to Port Arthur.

Q. Then what company do they connect with?

A. They connect with the Port Arthur Telephone Company that owns the local exchange at Port Arthur.

Q. That has a long distance line?

A. No, they have no long distance line. Q. Well, I am speaking about how far any independent long

distance toll lines can carry tolls in this state?

A. That is just what I answered, from Waco to Port Arthur would be about the longest distance for any one company. circuits through Port Arthur, Waco, to Denison and Sherman, would be the longest possible haul over an independent line.

Q. Then, in other words, there is no Telephone Company in Texas that can get its messages outside the State without making some arrangement with the Southwestern Tel. & Tel. Company.

A. Yes, sir, we have some very strong competition in the long haul business out of Texas with the Mackay Telegraph 207Co. They have long distance lines, I think they are into Kansas City now.

(By Mr. Duls:)

Q. Their telephone lines?

A. Yes, sir, they go to Nashville, Memphis and New Orleans.

(By Mr. Howard:)

Q. Have we any Mackay telephone line in Houston?

A. Yes, sir, they have an office here in Houston. Q. Well, is there any way of getting long distance messages out of Houston?

A. Sure, get them over the Texas Long Distance Telephone Co., over the Mackay Co. and there is an independent line out to Humble.

Q. Independent line out to Humble?

A. Yes, sir.

Q. Is that the only independent line running out of Houston?

Q. Is that the only independent long distance line running out of Houston?

A. I just said, Mr. Howard, the Texas Long Distance Telephone Company have a line out of Houston.

Q. Where does that go to?

A. That goes to Waco and goes with the Texas Toll Line 208 Co., and independent concerns, and goes to Dallas and Denison and Sherman, all over North Texas, up there, Greenville, McKinney.

(By Mr. J. D. Frank:)

Q. You could talk from Houston to St. Louis, Nashville and other places over the Mackay Co.?

A. Yes, sir, they are doing it every day without touching the Southwestern Line or the A. T. & T. Line.

(By Mr. Howard:)

- Q. How would a call from here to St. Louis be handled over the Mackay?
 - A. Why, it would probably go through St. Louis or Nashville.
 - Q. How does it originate here, where would a man go to talk? A. The Mackay office, they have a local office here.
 - Q. Do the Southwestern Lines negotiate any calls for them?
 - A. No, sir, not in Houston. Q. Not in Houston?

 - A. No. sir.

(By Mr. J. D. Frank:)

Q. The Mackay Company also has a number of long distance stations in Houston, something like 75 or 80 stations, hasn't it, Mr. Copes?

A. Yes, sir.

Mr. J. D. Frank: Here's the proposition. You can send a telephone message over the same line at the same time you are 209 sending a telegram and I think they can do it.

(By Mr. Howard:)

Q. Have you any idea how much business the Mackay people do?

A. Well, they do enough to worry us considerable. Q. You mean, you would rather have it all than to have what you do get, less what Mackay gets?

A. Yes, we would like to have it. They get some very nice busi-

ness out of here.

Q. Well, how large would it get to be, what volume before it excites

your envy?

A. Why, we don't know, Mr. Howard. We are investigating those things to find out as near as we can what they are doing, but we don't know what they are doing.

Q. People go to their office and use their office as a station?

A. Yes, sir. Some people go to their office and they have out in town here in offices that are large toll users, a toll terminal, we call it, I don't know what they call it, and they get connection that way, right from their offices.

Q. Have they ever applied to you or the Southwestern Telephone Company for exchange service?

A. I don't know.

Q. They would cause you a good deal more trouble if you would handle their messages for them here?

A. Do what?

Q. They would cause you a good deal more trouble if this exchange would handle their messages.

Mr. Duls: You mean, give them terminal facilities?

Mr. Howard: Well, yes, I don't know what you call it. I mean, permitting the subscribers to telephone down to Mackay that they want to talk to Dallas.

A. Well, I don't know, Mr. Howard, whether they have made

that request or not.

Q. Well, you do know, Mr. Copes, that if they had the privilege of using this exchange the way the Southwestern Long Distance toll uses it, that it would greatly facilitate and augment their business, don't you?

A. Well, it would facilitate the Mackay Telegraph Company's

business, yes, sir.

Q. It would facilitate it?

A. It would facilitate business over their lines, surely.

Q. Over their telephone lines?

A. Yes, sir.

211 Q. And have you ever made any study to determine about how large a local exchange like we have here will increase the volume of long distance tolls?

A. Do you mean, how much a local exchange connection will

increase the toll business of the toll line company?

Q. Yes, sir.

A. Why, I have never made a study in any town as big as Houston, or anywhere nearly as big as Houston. I have made

studies in smaller towns.

Q. And don't you know it to be a fact, Mr. Copes, that owing to the fact that in a City of 160,000 people, nearly all of whom have access to local telephones which originate calls and send them over the long distance wires, without the necessity of going to the long distance station or office, makes a city like Houston wholly incomparable to these little towns that you have been telling us about, like Brownwood and Denton?

Mr. J. D. Frank: And Dallas.

Q. No. He hasn't got everything included. You own everything in Dallas. Would you undertake to say that a city like Houston, in handling and in determining the relative value of these two services, the local exchange service, and the long distance toll service, is comparable to a city like Brownwood or Denton, or even Waco?

A. In a general way, yes, sir.

Q. Just in a general way?

A. Yes, sir.

Q. But in a specific way, is it comparable?

A. It would depend a good deal on the proportion of long haul business handled at a small point. If they had a good deal of it like at Brownwood, I consider Brownwood as very nearly comparable, as much so as any small point could be.

Q. Of course, you said you made no study of a city of this size.

How large a city have you made a study of?

A. The lar-est City I can remember is Georgetown, Texas. I was rather interested in that.

Q. How large a town is that?

A. Oh, it is a town of 4,500 people.

Q. Nearly everybody goes down to see the train come in?

A. No, the depot is too far away from town. It is about two miles from the depot, you know; they don't go down that far.

Q. Now, isn't it a fact that those little local exchanges like that, you can run a toll line almost as well with an exchange as you could without one, because people are all in the habit of going down to get their mail and going down town, in a little community, likely

they don't mind running up to the telephone office and getting their messages, or going down there to send one, in fact,

it whiles the time away or breaks up the evening?

A. Why, I wouldn't pretend to say to you or anyone that the

connection with a toll line is a great benefit to it.

Q. And the bigger the City, up until you reach a very considerable sized city, the bigger the benefit the exchange is to the toll line isn't it?

A. Well, I don't know, I don't think that follows necessarily. The class of the town has a good deal to do with it, the class of the

business.

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Q. Weil, wouldn't that be a fact, you take a little place like Georgetown, or Richmond, or Liberty, over here, would it make much difference to the toll owners in those sort of places whether they had an exchange there at all or not, anybody wanted to call Richmond or Liberty or any of those little places, they would just put in a call and everybody in the village would know it?

A. Toll business handled in these small towns, if the business was split up into eight or ten cities, it wouldn't make much dif-

ference to us.

Q. Would you lose a single toll into Liberty or Richmond, if they

tore down a few wires-

214 A. (Interrupting.) Yes, sir, we would lose them. We would lose them anyhow in these little towns, even though we have connection with the local exchanges.

Q. Why do you lose them?

A. Why, they are not in their offices, or they are out fishing some

place, just as they are in the City.

Q. But if they are in town, you would get them just as easily as you would, because the girl would stick here head out of the window and say, if you see Jim Smith, tell him there is a call for him?

A. They hate to walk four or five locks worse than they do in Houston.

Q. But to get right down to the fact, that is a fact that in these little places, an exchange doesn't to any appreciable extent operate

as a feeder to the long distance line?

A. I think they do, Mr. Howard, in almost as great an extent as the large exchange. I think the benefits to both the toll line companies and the exchange is just about equal, regardless of the size of the town. That is my honest opinion. I know it is. You take an owner of a little exchange out here in the country, in a little town, if he hasn't got a toll line connection, and he wants to sell

that exchange, he has got a mighty poor chance to sell it if he hasn't got a toll line connection. That is the practical way it would work out. I think the value is just about the

same both ways.

Q. I don't suppose, Mr. Copes, that you ever went into, you made this set up based upon experience—

Mr. Duls (interrupting): Based upon the facts. This is one time

we are giving you the actual facts.

Mr. Howard: Now, you haven't. All you have done is you have gone out and shown us you have driven a hard bargain with these cities——

Mr. Duls (interrupting): No, they are independent companies, dealing with each other—

A. (Interrupting.) Mr. Howard, I will say this to you: I have handled these contracts with these connecting companies for about 12 or 15 years directly and I have never had a case yet where I couldn't go out into this man's office, and look at him, and look at his operators, and find out how much rent he paid, and how much he paid for his electric lights, and how much his ice cost him, and his coal, etc., and figure his—I generally go at it about this way.

I take his local revenue from his subscribers. I take the toll business that originates there, he gets his commissions on,

and I figure the expense in proportion to the run of that business, and I have never had a case yet where a man wasn't satisfied that he was being fully paid on an originating and terminating business on a basis of 25% of the outward business. Now, I have had cases where an exchange does, we sometimes ask them to do what we call "center checking", but we always pay them for that, entirely outside of their commissions, which, of course, is a fair thing to do, just exactly what we do for ourselves here in the Houston Exchange.

Q. Eliminating this Texas, or whatever it is, Long Distance Telephone Company, the one that operates in Waco, disregarding that, what in your opinion is the total investment in any telephone com-

pany in Texas outside of the Southwestern?

A. You mean, the company that has got the largest investment? Q. Yes, what would be your judgment of the company that has got the largest investment, outside of the Southwestern?

A. In toll lines alone?

Q. No, in all its property.

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A. Well, that is a pretty hard question to answer off-hand, Mr. Copes. I hadn't thought of it in that angle.

Mr. Duls: The Dallas Telephone Co. would be the largest.

Witness: The Dallas.
Mr. Duls: You are speaking of toll lines?

Mr. Howard: No, I am speaking of telephone companies, any telephone company, the most invested by any company, outside of the Southwestern?

A. The Texarkana Telephone Company, I think, has.

Q. That is the one operates in Waco?

A. No, sir, at Texarkana.

Q. At about how many different points are they operating?

A. You said investment in total telephone plants, you didn't say toll lines.

Q. I am not now asking you about toll lines. I am asking you

about how many different points they have exchanges?

A. They have an exchange, and they acquired one the other day at Sulphur Springs. Well, Greenville is the Greenville Telephone Co. but it is owned by the same people, and they own Jacksonville over here.

Q. Own it or own its stock?

A. They own the plant. I would say they are about the biggest. Q. Have you any idea at all about what their properties are worth?

A. Why, I haven't, anywhere near what it would actually be. Q. You haven't made any study of this question based

upon the expense of handling the tolls in Houston, have you? A. No. sir.

Q. You have never made any comparison between the investment of the Southwestern Telegraph & Telephone Co. in toll property and its investment in local exchanges, have you?

A. No, sir.

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Q. You have never made any investigation as to the representative earnings of the toll properties or the exchange properties?

A. No. sir.

(By Mr. Duls:)

Q. Is it worth anything, Mr. Copes, to the local exchange subscribers of this Houston Exchange, to have long distance connection with the Southwestern Telegraph & Telephone Company's long distance lines?

A. Yes, sir.

Mr. Howard: Of course it is.

Mr. Duls: Well, you have been asking from the other angle, and I wanted to ask him from this angle.

Q. Suppose there wasn't no exchange of the Southwestern Company here, Mr. Copes, and there was just the lines of this Mackay Company coming in here, would the subscribers be-there wouldn't be any subscribers, would the people of Houston, the business 219 men, be in as good a position as they are now with the Southwestern toll lines here connected with this exchange?

A. Certainly not, there couldn't be any question about that.

Q. It is also a fact, is it, or is it not, Mr. Copes, that by reason of this long distance connection with the Southwestern Toll System, you get a great number of subscribers here for the Houston exchange. which you would not otherwise obtain?

A. Oh, there is no question about that. That is true of any ex-

change, Houston, or anywhere else.

Redirect examination.

Questions by Mr. Duls:

Q. Now, Mr. Copes, Mr. Howard was asking you about the number of times a local operator would have to perform services for the long distance lines on a call from San Antonio to Houston, he was talking about this 103 method that we have now in effect?

Yes, sir.

 A. Yes, sir.
 Q. That is, the operator here in Houston makes no record of the call?

A. No. sir.

Q. That merely then relieves the long distance operator 220 here of the necessity of making a record for that call?

A. That is correct, yes, sir.

Q. The operating lines at the Houston end is only one of the things that this 25% of the outward toll revenue covers?

A. Yes, sir, that is correct.

Q. There's billing of the account and other expenses connected therewith also?

A. Yes, sir.

Q. You have got Dallas in some of these exhibits. Have you made a computation of what Dallas would receive if it were on the

same basis that Houston is?

A. Yes, I thought as Dallas was the only city that was comparable in size with Houston, it would be rather interesting to know just how it would work out in Dallas, if the Dallas Telephone Co. was actually operating-

Q. (Interrupting.) Just a minute. You mean if the Dallas Telephone Co. were performing the same services for the long distance

lines?

A. Yes, in exactly the same way, doing all the billing and bookkeeping, and in addition to that furnishing all the local operators that the Houston Exchange was doing. In Dallas they would re-That is due to the fact of the large ceive 8.9 cents per call.

221 amount of long and short haul business out of Dallas.

Q. You haven't made any study of the expense of performing these services here because you are not an accountant, are you? A. No, sir.

(By Mr. J. D. Frank:)

Q. There is just one question I want to ask Mr. Copes. for the City, at least made the inference in one of his questions that you were building up your methods of handling the toll business out of expense of the local system here. Now, that 103 method that you spoke of, the method of handling your long distance calls, doesn't impose any additional work on the local operators here in Houston. does it, that is, the local exchange operators.

A. No, sir, not a bit.

Q. It doesn't affect it either way or the other? A. No, sir.

Q. And any charge that you have made in handling your long distance calls, say between San Antonio and Houston has nothing to do with the work on the part of the local telephone operators?

A. No, sir, it simply cuts it down a little. It cuts down the work. It is in favor of the exchange if there is any difference at all.

999 (By Mr. Howard:)

Q. You say, in favor of the exchange. You mean that the exchange would do less work if the tolls were not handled-

A. How's that?

Q. You don't mean to say that these exchange operators would have to do more work if this long distance was eliminated entirely?

A. No. I didn't say the local exchange operators. I said the Houston exchange.

(By Mr. J. D. Frank:)

Q. It simply cuts down the work of the Houston long distance operators?

A. Yes, sir, that's the idea, and benefits the exchange to that de-

Q. But so far as the Houston local exchange operator, as contradistinguished from the Houston long distance operator is concerned, it does not affect her work at all?

A. Not in any degree at all.

(By Mr. Howard:)

Q. You say it cuts down the number of long distance operators?

A. It saves the time of the Houston long distance operator, to the degree that it takes her to write a ticket, that is all. It eliminates the making of one ticket. 223

Q. Now, what benefit is that, or saving is that, to the local

exchange?

A. The local exchange is paying these local operators and getting a commission for it, getting 25% for it. If they had to make tickets, the local exchange would probably have to have more operators for making those tickets.

Q. Of course, that is our contention that if this long distance was

eliminated entirely, that the expense of operating this exchange would be much less than they would gain by it, because we claim that the 25% wouldn't pay the actual cost.

A. Well, I think it does, Mr. Howard, and you have got the consensus of opinion of the telephone people all over the United States against you on that. They are the people that ought to know.

Mr. Howard: Well, we haven't had it worked out for us yet on an operating basis.

Mr. D. A. Frank: You haven't had your expert on it yet.

Mr. Howard: You come here and tell us you have got a confused line of accounts that you can't seggregate for us and you are going to hand us something in the way of a tip and that is not what we want. What we want to know is what burden you have put on us.

Mr. D. A. Frank: I don't think that is a fair statement, but go on.

Q. Now you said awhile ago, Mr. Copes, that a long distance toll line benefitted an exchange in that it got a great many more subscribers?

A. Yes, that is the tendency of any exchange, of course.

Q. Then it is also the tendency that the more subscribers you get the more expensive it is to operate the exchange?

A. Yes, I guess that is true too.

Q. So that the direct effect of the long distance is—So then, the long distance tends directly to increase traffic expense and the operating expense of the exchange per 'phone?

A. No, that would be so little that it couldn't be figured probably. The adding of an additional subscriber to the exchange, the local

service between those subscribers-

Q. (Interrupting.) Now, let me get the laugh now. You gentlemen know so much about these things and you are here to give us an exhibit of technical knowledge,—Now, let's analyze that thing and see where the laugh is. You have told me that, haven't you, that the long distance toll adds subscribers to the exchange?

A. Yes, sir, each connection of the long distance lines to the exchange will have a tendency to increase the local business of the

exchange.

Q. And the more local business you get on the exchange, the more expensive per exchange it is to operate. Now, show me the joke.

A. The more subscribers you add to the local exchanges increase the operating expenses of the exchange, but it is not the adding of the toll business to that that causes the increase, adding of the local stations is what causes the increase in the operating expense.

Q. Of course, adding the new stations is what causes the increase.

A. Mr. Howard, the time that the local operator spends in handling toll calls for the average subscriber wouldn't amount to anything.

Q. What?

A. I say, the average time that the operator would spend in handling these toll calls wouldn't amount to anything. (By Mr. Duls:)

Q. Now, let me ask you, if the more subscribers makes 226 the expenses increase a little bit, how about the revenues which the exchange receives?

A. Certainly, the revenues of the exchange would absolutely be

increased by every toll call they handle, of course.

Q. And also by every exchange subscriber that they receive?

A. Why, certainly.
Q. And that revenue would be on the City's side in these cases?

A. Why certainly.

Mr. Howard: But you are amusing. The more people that you add to the exchange, the more burden you put upon the service, although it is true you may have more people to talk to.

(By Mr. D. A. Frank:)

Q. I would like to know, Mr. Copes, if you have got any idea in Houston, what per cent of the long distance business will be done, say by a thousand subscribers out of the 27,000 stations here?

A. Why, I don't know exactly, Mr. Copes, but I would say that in Houston, you could pick a thousand subscribers out of the Houston exchange that would give us probably 75% of our toll business.

Q. So that if the City of Houston were owned by a separate company that is not the Southwestern and did not want to make this contract with the Southwestern, the long distance lines could by putting up a little switchboard of a thousand stations and putting long distance telephones with a thousand subscribers do practically 75% of the business they are doing here now?

A. Practically, yes, sir, I would say 75% of it.

Q. That ever been done, Mr. Copes? A. The Mackay Company is doing it in Houston right now, they are doing it in Dallas, and doing it every place they are operating. They are putting in those toll terminal telephones all around town.

Q. The reason the Mackay doesn't do it more extensively is be-

cause they only have 10 or 12 offices all around the-

A. (Interrupting.) All they want to do is help pay their lines. Q. How would the stations be put in, who would operate them? A. The toll operators would handle them, the toll operator would handle the thing without any local switching at all.

Q. Then, what do they do with the tolls when the calls come in? A. A case like that with just a thousand operators, you 228 would probably have two or three of them, and the rest of them handle the toll business. I don't know just how they would do that. I think it would be feasible.

Q. You think it could be done for very little cost?

A. Yes, sir.

Q. The proposition is, you would undertake to go around among these 27,000 subscribers and get the ones that use long distance tolls and cut them down to a thousand and give them-

A. (Interrupting.) Toll terminal stations. We furnish them stations now for that purpose.

Q. You think if you would cut them down to a thousand in this

city-

A. (Interrupting.) We would get 75% of our business.

Q. When did you figure it?

A. Oh, I haven't seen Houston figured out that way, exactly, but I have seen it figured out, and off-hand, I would say a thousand stations in Dallas would take care of 75% of the business.

Q. In Houston?

A. In Houston I mean.

Q. What is the general percentage of long distance telephones you have to the business phones in Houston?

A. Oh, I would say 40 to 60.

229 Q. You don't have nearly as many business subscribers as you do residence subscribers?

A. About 40% of the business, I should say.

Q. 40% of the business and 60% of the residence?

A. Yes, sir. Q. Out of the 40% business, there would probably be less than half of those that did any long distance business?

A. You have some residence subscribers, of course, that would do

more toll business than just business subscribers.

Q. But if you had a thousand of the leading toll subscribers, most of them would be business subscribers, wouldn't they?

A. Oh, yes, the biggest part.

Mr. Howard: This is a fact, if you stop to think about it, that it is the scattering tolls that you get that are very considerable, and it is only these that you would lose, you wouldn't lose tolls from business men, if you didn't give them this service. If it is a business proposition, they would go to the exchange.

Mr. D. A. Frank: But they wouldn't go as often.

230 Q. But men that are talking about, and women in their homes and girls that want to talk to young men and young men that want to talk to girls, if they couldn't get to a 'phone where it was handy, they wouldn't use them, would they? And isn't it a fact it would be mighty hard to locate the tolls that are originated over the local exchange lines.

A. It would depend on how bad he wanted to talk to these girls. Q. Maybe he would go, and there's lots of them that wouldn't?

A. Oh, yes, lots of them wouldn't.

Q. Lots of them more of a social nature of calls, that wouldn't go at all?

A. Yes, sir, that is true.

231 A. E. Scott, a witness for Plaintiff, testified as follows:

Cross-examination.

Questions by Mr. Howard:

Q. Mr. Scott, my understanding is that upon the books of the Southwestern Company you have a charge of an expense incurred on toll lines, have you not?

A. We have the maintenance expense in a separate account.

Q. Aside from the books, there is a certain amount of expense incurred in the operation of toll lines?

A. Yes, sir.

Q. A part of that expense you allocate to the different exchanges

throughout the district,—throughout the State?

A. No, sir, we don't allocate any part of the expense to the ex-The expense in connection with the toll work incurred at the local exchange is charged to that exchange at that time. It is not an allocation, but an actual expense.

Q. Incurred in handling and terminating-

A. (Interrupting.) There is no division made between local and toll on expense of a common nature.

Q. They are all combined, those expenses,-they are all 232 combined and can not be separated?

A. No, sir, we make no separation.

Q. Interest and depreciation and maintenance, whether toll or

local, all go into one pot, into one classification?

A. You speak of depreciation. Depreciation is not separated on the books as to any class of plant,—it is simply one total amount.

Q. I am speaking about the tolls and toll lines and local toll

equipment in the local exchange. You make no separation of the maintenance?

A. The maintenance is separated as regards the maintenance on

the lines outside of the exchange.

Q. I am talking about the lines inside. The only-

A. (Interrupting.) The only maintenance item which is charged to the exchange and which is in connection with tolls is the toll maintenance, or the maintenance of toll central office equipment. That is included as a charge against the exchange.

Q. The toll lines—they run right into the exchange?

A. That is not charged to the exchange.

Q. Do you have separate toll lines running up to the exchange? A. Yes, sir, in some cases, and in some cases you use the 233 exchange.

Q. You do separate the maintenance on that?

A. Yes, sir.
Q. But all this office equipment is carried together?

A. That maintenance item is a small item.

Q. A small item? A. Yes, sir.

Q. Mr. Scott, the only other expense of toll operations that you have referred to and that is not paid for,-charged locally to the local

exchange is the maintenance of the toll lines, the connecting lines connecting different exchanges and the taxes on the toll lines. What other toll operating expenses are there?

A. If we were to make a rate case-

Q. (Interrupting.) I am not speaking about that. That is a differ-What other operating expenses have you in connection ent question. with toll lines?

A. Traffic expense, commercial expense, there is a general expense,

there is depreciation.

Q. Depreciation and maintenance, you mean the fund set aside to rehabilitate the toll line?

A. Replacement.

Q. Where is the traffic expense charged? Is that separate? A. The traffic expense when incurred at an exchange is 234 charged to the exchange.

Q. What do you call traffic expense?

A. Operating expenses.

Q. You mean the operators? A. Yes, sir.

Q. What operators do you have that are not at the different local

exchanges?

- A. We have points like Waco, for example, where we have no local exchange. We have operating expenses there because we operate a toll board there.
 - Q. Some few places in the State where you haven't an exchange.

A. The total amount is quite considerable.

Q. About how much?

A. I think it is getting up to \$300,000.00.

Q. A year?

A. I would think so, but I have made no figures.

Q. It might be \$100,000.00.

A. I know it is more than \$225,000.00 because I have seen that much on it.

Q. You do allocate to the local exchanges the general expenses? We allocate general expenses to the exchanges in proportion to

the direct expense of the exchange.

235 Q. You have found it to be a practical thing to allocate the general expense to the different exchanges, have you not, in certain cases?

A. We allocate the general expense. That is a thing that is so

general you can't very well do otherwise.

Q. What is in the way, if you desire to do it, of allocating to the different exchanges a portion of all the toll operating expense, including maintenance?

A. I think you would have to make a study of the State as a whole, you would have to consider every individual item. One item would have to be prorated one way and another item would have to be considered and looked at and probably prorated in another way.

Q. Why wouldn't that be true of general expense? You don't allocate general expense, a great part of it, upon the exact amount that has been done in the particular locality but you allocate these expenses along general lines.

A. I simply have one general basis for apportioning general ex-

Q. And if you desired to do it, you could make another general

rule for the allocation of toll operating expenses?

A. Yes, sir, but there would be so many elements entering into that.

236 Q. But it could be done?

A. It would be very difficult to get any basis-

Q. (Interrupting.) It would be difficult?

A. Yes, sir.

Q. But it could be done?

A. Anything can be done whether it is done right or wrong. That would be the question.

Q. The Company has never seen fit to do it, but they have been

able to allocate a great many general charges to the local exchanges.

A. Rather than make a lot of prorating of expenses we have apportioned, given a proportion of the revenues to the exchanges.

Q. Where are the books of the Southwestern kept? A. The general books are kept at St. Louis.

Q. On the books at St. Louis do you have an account set up with every exchange in the State?

A. No, sir. Q. Where is that done?

A. At Dallas.

Q. That is done at Dallas?

A. A summary of certain accounts. For instance the traffic account, that is kept by the traffic department.

Q. You have books showing both local and toll, showing every station, showing what is going on at the different exchanges 237 in the State.

A. Yes, sir.

Q. Otherwise you couldn't have come and told us about these things.

A. Every department keeps its own part of the books.

Q. Where is the account, where do you keep the account where you take care of the tolls? You don't keep it in the Houston exchange or the San Antonio exchange, where do you keep it?

A. The records we keep of the toll revenues is the record of the

originating business at Houston.

Q. Who do you have the account with? You don't have it with Houston or you don't have it with San Antonio, you just set up an account with the toll lines of the State?

A. I don't quite get your question. We don't have an account

with anybody.

Q. I know you don't, it is all one Company and it is the books of the same company, but you do segregate Houston from San Antonio, and you segregate Houston from the rest of the business.

A. Not certain expenses.

Q. Do you segregate the toll lines, and open up an account for the toll lines on certain direct expenses?

A. On the maintenance, only. That is the only item that 238 is the only item that we keep as a separate item.

Q. You keep taxes separate.

A. No, sir, taxes is just one total.

Q. You allocate the taxes?

A. No, sir, the taxes are carried as a total tax proposition, and when we make up figures for a rate case-

Q. (Interrupting.) I am not talking about a rate case.

Mr. D. A. Frank: Let him finish his answer.

A. We keep it as a total and when we have a case such as this. or a rate case, we go to the records and find out the amount of taxes applicable to the particular town or exchange or district, or whatever division we are working with.

Q. You find out what was actually paid in the particular town?
A. Yes, sir, but there is no record kept of that.

Q. You have got to find out how much has been paid and it is not allocated but is based on definite figures?

 A. Yes, sir.
 Q. Suppose you had a hearing involving the toll exchanges, where would you get those taxes?

A. Toll exchanges, we don't have such things as toll exchanges.

Q. Suppose you were called upon to hold a rate hearing 239 upon the toll property. The State Commission contended that your toll charges were too high-

Mr. D. A. Frank: There is no such commission in the State of Texas.

Q. I know that.

A. You would have to go to the same source of information to get information relative to toll taxes.

Q. Suppose the toll taxes became a pertinent matter?

A. You would have to go and find out what you have paid on toll.

Q. In all the different counties in the State?

A. Yes, sir, it would not be susceptible of accurate truth because we don't make a record, making accurate division between exchanges and tolls on taxes. It would be an approximation.

Q. You could get the taxes paid by all exchanges and deduct the

difference and that would be the taxes chargeable to tolls.

A. I think I explained in connection with Houston, or Harris

County, how we determined that.

Q. You say that you can find out from the local exchanges, all the taxes that have been paid locally.

A. Yes, sir.

Q. But you haven't a separate record upon the books, 240 but just carry one large tax item. Then when you deduct all taxes chargeable to local exchanges, it is reasonable to infer that the balance is toll taxes, is it not?

A. You said in order to get the-

Q. (Interrupting.) Wouldn't that be true?

A. No, sir, it isn't true. You haven't quite got the proposition.

Q. I thought maybe you could answer that without going into details.

A. If you want an answer, I will give you an answer.

Q. First answer it, "yes" or "no"

A. I can't answer it "yes" or "no". I am a whole lot like a man

who was asked whether he was still beating his wife-

Q. (Interrupting.) I have asked you a thing that is either true or not true. I have asked you, if after deducting the taxes that you say you can ascertain by finding out what you have been paying for the local exchanges, if you can find out the amount you pay for toll taxes by deducting the sum of the amount paid at the local exchanges, from your total tax.

A. If we went to our records and determined the total amount of taxes chargeable to each exchange and against each exchange in proper proportion—there are taxes which are not separable,

like the capital stock tax, which is a charge against the 241 property as a whole, for the State, both for Texas, and the United States, give a proper proportion to the exchanges and make some sort of allocation as between an exchange and toll and do that for every exchange and when you got through you would have what would apparently cover the toll taxes, but that would be an estimate.

Q. What?

A. That would be an estimate, because you have to use allocation.

Q. When you pay your taxes—— A. (Interrupting.) We pay for a County as a whole. Like Harris County. We pay taxes for the County as a whole. That includes exchange and toll property. Q. You have to make an allocation of that amount, don't you?

A. Yes, sir.

Q. So you do allocate a part of the taxes in the local exchange?

A. Yes, sir.

Q. It wouldn't be a difficult matter to allocate upon a fair basis between the exchanges of operating expense, would it?

A. If you knew how to do it.

Q. How is that?

242 A. If you knew how to do it. You might be fair if you knew how to do it, and you would not be fair, if you didn't,you might be very unfair.

Q. I am assuming a man that knows how to do it.
A. That is the whole question. Nobody has discovered how.

Q. If you get the pro-rata part that the Houston Exchange bears to the other exchanges-

A. No, sir, that would be very, very wrong.

Q. It could be done.

A. But it wouldn't be right.

Q. Why?

A. Because there might not be any relation between the amount of the investment and the income, or the expense and the amount of the investment. There might not be any relation between the property value and the property cost.

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Q. It might be done on the number of tolls handled or the number of stations.

A. You can take a half dozen guesses.

Q. You don't think the toll lines could be allocated to the different exchanges, the toll line property could be allocated to the different exchanges upon any sort of approximation.

A. We are doing that.

Q. How? How is that? A. We are doing that. Q. How?

A. By allowing 25% of the toll revenue.

Q. That is not an allocation of the property? A. That is an allocation of the revenues.

Q. That is the method you used?

A. It is a satisfactory method to two hundred and some odd other companies.

Q. You have got wedded to that idea?

A. That method has been accepted by the commission.

Q. Speaking about things that can be done mathematically-A. (Interrupting.) Mr. Lyndon has tried to do things mathematically and they get you to an awful place.

Q. You think that?
A. I think that Mr. Lyndon will admit it.

Q. I will ask you why you can allocate in one case and can not allocate when requested to do it.

A. We haven't been requested to do it that I know of.

Mr. D. A. Frank: What do you want allocated?

Q. I am trying to get you to tell us what percentage of your toll property in Houston, what percentage it bears to the other exchanges throughout the State.

Mr. D. A. Frank: The toll property in Houston bears to 244 the other property?

Q. Yes, it can be done.

A. It would be a long job.

Q. It could be done?

A. An almost endless job, and could only do it, as I said before, every account would have to be considered on its own basis and it would be such an involved study that when you got through you would not be very proud of it. I wouldn't.

(By Mr. Howard:)

Q. So then, in short, the way this thing is set up on the books a part of the local and a part of the tolls are confused in that they are inseparable and a small part of it, maintenance and some taxes and the operators that are working where there are independent exchanges are not allocated and then instead of trying to carry the scheme of allocation all the way through, so far as the expenses are concerned, and so far as the plant investment is concerned, why you just allocate this 25% as a sort of an offset of compensation?

A. It is as compensation in lieu of the expenses incurred by the

exchange in performance of toll work.

Q. Although, you don't know upon what basis you could actually settle with the local exchange in regard to the expenses? 245

A. Well, as I have said before there is a number of com-

panies that are accepting that-

Q. (Interrupting.) No, I am talking about the actual expense, you can't come here and tell us what the actual expenses are that this exchange incurs for handling the tolls?

A. No, sir, I can not.

Q. You could not do that?

A. No, sir, I could not.

Q. Then the 25% is founded upon some sort of a guess or approximation?

A. It is not a guess or approximation, it is a special percentage made by ourselves with all our connecting lines and by connecting lines with-in their dealings with us.

Q. And that makes it sufficient to pay the cost requirement of

what the costs are?

- A. It must be pretty nearly right or the other fellow would not take it.
- Q. That is your conclusion about it, you are an accountant and your mind is supposed to dwell upon——
 A. (Interrupting.) That is why I deduct the 25%.

Q. You mean you initiate this 25%?

A. No.

Q. You take 25% because the Executives of this company 246 tell you to take it?

A. But if I had not taken 25%, I would have had to make

a lot of apportionment.

Q. What is your attitude towards this company, an accountant or a director of policies?

A. I have no attitude; I am an accountant.

Q. Then you could talk to me about the accuracy of your figures and bookkeeping without mingling it up with whether it is for the company or against the company, you can make those differentiations can't you?

A. I think so.

Q. Now, foregoing for the time being, what the policy of your company is, I am asking you whether this is an accurate conclusion and whether it has been arrived at with accuracy or whether it has an element of inaccuracy in it? That is a simple question, it is either accurate or it has an element of doubt, and inaccuracy.

Mr. J. D. Frank: You assume there must be some inaccuracy in your question.

Mr. Howard: Well, if it is inaccurate he can tell me so.

A. If an allocation or a pro rate—if the use of an allocation or a pro rate means that your statement is going to be accurate

or inaccurate, even my method of doing it or the method 247 you are suggesting, either one, would be right or it would be wrong, because I have taken some allocations and I have not taken some that you are suggesting.

Q. Any allocation that you take, in other words, is but an approxi-

mation?

A. It is an approximation. It is an estimate based upon the best

we have available.

Q. Now, Mr. Scott, have you ever made any computations to find out, you have figured it out here, what Houston is earning and you have probably figured out what all the different exchanges are earning, have you ever taken the trouble to take the earnings of the toll lines and the value of its property and its operating expenses and determine the annual return over and above all operation expenses including maintenance and depreciation?

A. No, sir.

Q. Earned by the toll lines?

A. I don't think that has ever been done, Mr. Howard. It has not been done by me and I don't believe anybody else has ever done it.

Q. It can be done, can't it?

A. I don't know whether it can or not. I don't think I would be able to do it.

Q. You don't think you would be able to do it? A. No. 248

Q. Well, now, let's see the process involved. The first thing you would get, the value of the toll lines, that would be comparatively easy to get, approximately correct?

A. No, that would be very difficult. It would mean an inventory and an appraisal of the toll lines throughout the entire State of

Texas.

Q. Well, we will take it the way you have it on your books.

A. Well, I can't start out with that assumption. You mean go to the books and find out what the amount on the books is for toll property?

Q. You have got an inventory of your entire toll lines in the

State haven't you?

A. No. sir.

Q. Is this company operating without having an inventory of its

A. Yes, it took them about three months to take an inventory of the property here in Houston alone. We have no inventory of the properties in the State.

Q. You haven't any inventory of the toll property in the State?

A. No, sir.

Q. How do you set up the number of poles you have?

249 A. That is simply accumulated record of a number of items just like my books are and an accumulated record of an amount of money; that is not an inventory.

Q. Do you mean to say, Mr. Scott. hat this company is today not in position to tell how many poles it has in the operation of its Statewide business?

A. It has a figure in the record of a number of poles which they think they have and I can tell you, Mr. Howard, on the side, that it is very wrong, the number on the record.

Q. Well, then, how did they keep any account of their business,

if they have not any record?

A. The number of poles we have is not important.

Q. Whether you have one hundred poles or a million?

A. The number is not valuable. It is a nice statistical record and probably some department may have some use for it, but it is not important.

Q. So what you do know about what this toll equipment cost—

A. We have a record, the accumulated book record of the cost of the tolls property, that is the toll lines. We have the toll switchboard included on the books in our exchange switchboard account. There is no separation there.

Q. Well, your books have been kept then so you can't separate the toll lines from the exchanges at all, you can't even give me an approximate amount of property that is invested in

tolls as distinguished from local?

A. I said I can't tell the amount shown by the books of the toll

Q. Well, let's assume if we can get over this approximately, if you want to set it up that way, or get it from the books, just assume it can be done, it is a human possibility. Then once we have the valuation we have got a start towards finding the earnings of the toll lines.

A. Once you have the valuation, you have a basis to start with, of

course.

Q. Then the next thing is the amount of your earnings?

A. That is about all you want then.

Q. All right, well now, we have got too rather important steps in making this computation; now, the next thing that would concern us, would be our operating expenses including maintenance and depreciation, wouldn't it?

A. Before you could find your net returns, you surely would have

to determine what your expense was.

Q. Well, we deducted then, we get the operating expenses and we deduct it from our revenue, wouldn't we?

A. Yes.
Q. That would be our next step. Then we have our net return in round dollars?

A. Yes, sir. Q. Then to reduce it to percentages, we would divide our net return by our capital investment?

A. Yes, sir.

Q. Now, have you any way of disputing the proposition that that computation as Mr. Kelsey said would amount to forty per cent on your toll line investment as segregated and separated from your exchange property?

A. Mr. Kelsey is undoubtedly so far wrong-

Q. (Interrupting.) I know you think he is wrong.

A. We think he is wrong.

Q. You think he is wrong, but you have never done it. Your

mind can't grasp the idea?

A. It would be my opinion that that—that if we were making forty per cent on our toll business we probably would not have any toll business; it would be more than the traffic would bear.

Q. But it would help the traffic might-ly wouldn't it? operating expenses were paid by somebody else, that would tend very largely towards making the toll lines a handsome enterprise, wouldn't

it?

252

A. If we had enough toll lines and would make one hundred or two hundred per cent profit on it, we could give exchange services free, Mr. Howard.

Q. Yes, and isn't that the reason what you claim-for

showing the deficit here since time began?

A. Because we have been giving service, not only free, but for less

than what it cost.

Q. And haven't you been giving what you call an apparent deficit, because as a matter of fact, there was no real deficit and because the operation of this exchange was an auxiliary to the operation of the toll lines and that you are making money all the time out of the property in its dual capacity?

A. No. sir.

Mr. D. A. Frank: Do you object to the toll lines carrying Houston? Mr. Howard: I am perfectly willing that they should do it and they should do it because Houston helps carry the toll lines. That is our proposition.

Q. So you can't grasp any idea at all, except setting up these tolls on the basis of 25% allowance out of the initiating revenue?

A. Out of the initiating calls. Yes, I could make it up on a lot of different methods, but I would not feel that they were

right.

Q. You would not feel that they were right? This is the one that you have been pursuing, I understand, you do not pretend to initiate it and you are, yourself, simply carrying it out as any accountant would?

A. That is a fact.

Q. It is what you would do?

A. It is what we do and that seems to be a pretty logical thing to follow, doesn't it, Mr. Howard? Q. You, I have no doubt, think it is.

A. The Commissions throughout the territory think it is a satisfactory way to handle it.

254 A. E. Scott, a witness for plaintiff, testified as follows:

Cross-examination.

Questions by Mr. Howard:

Q. Mr. Scott, in arriving at your expenses in operating this exchange, you primarily upon your books set up all expenses, including the taking care of the toll?

A. Yes, sir.

Q. Then how did you get the toll expenses out of the general

operating expenses?

A. We don't take them out of it, in the making up of my figures, I attempt to get away and do get away from estimates as much as possible, my figures are actual expenses, and we have—I know we have in our expenses all our toll expenses.

Q. You have all your toll expenses?

A. Yes, sir; but to offset that we put in this 25% revenue, which is the usual revenue allowed to other companies—and that allowance is there.

Q. Have you any way of telling or determining what additional expense you are put to in the way of operation by handling this

toll charge?

A. I have never made any figures which would tell what the operating expenses were for the toll business, the two are so interlocked that the only way to get at it would be by making arbitrary estimates and making prorate of the various accounts, a very involved proposition, and very inaccurate when finished.

Q. You would not undertake to say that even 25% would pay the

additional cost of taking care of the toll traffic?

A. I would take into consideration the fact that taking that 25% basis, with companies in Texas that 25% would be about right.

Q. I am talking about your books, you are here as an accountant

and not as an advocate for the company I take it?

A. Well, I haven't made any study as to whether that is right or that is wrong.

Q. You don't know? A. No, sir, I don't know.

Q. Well, aren't your books so kept that it is possible to segregate the toll expenses from the general operating expenses?

A. No, sir, the two are so interlocked that you could only get the toll expense out by, as I said before, by arbitrary estimates.

256 by pro-rates.

Q. Then the proposition is, as I understand it, you come here with a lot of intermingled accounts, some of which are occasioned by the local exchange, some of which are occasioned by handling the toll traffic, and say we have had so much expense, but to offset that, why, we will pay you 25% on the outgoing toll charges?

A. Well, the fact that the figures are so intermingled and the fact that I am dealing with the records of the company, as shown by the books, is my reason for handling it in this way, it is more satisfactory to make one estimate, if you want to call the 25% an

estimate, than to take something out of one account and another account and all the accounts that would be involved.

Q. Well, you cannot tell us from your books how much of these general expenses was occasioned by the taking care of the toll

charges?

A. No, sir, the books don't show a division between toll and the exchange expense as in regard to the use of expense; of course the toll expense in connection with the plant outside of Houston is kept as a toll expense and not included in any of my figures—that is purely toll expense; but common expenses are all included in my figures.

257 Q. Isn't it susceptible of determing every expense occasioned by any one telephone call, that you can take a tele-

phone call as a unit and ascertain the expense of that call?

A. Well, that would be simply an estimate, you try to deal with a unit as small as a telephone call, you are getting down to a very small item, you will find you cannot confine it to that one particular thing; in connection with your toll business, you have your overhead, just the same as you have with your exchange business; you might in that one direct case, on that particular call, but that does not end the proposition—you have got building expense, for example, you have got your toll property, property in the same buildings with your exchange property, you have got to pro rate there or make an estimate of some kind; and so it goes all along the line, all kinds of estimates and pro rates would have to be worked up in order to get a figure that would be presumably correct—and then you would not be able to say it was absolutely correct, it would be a matter of the opinion of the men who were making the estimate.

Q. As to that item of toll expense, then, we have got to remain in

the dark?

A. Well, I think the allowance of 25% being-

258 Q. (Interrupting.) Well, I understand, you have told me the 25%.

A. That is accepted by seven hundred companies in Texas and appears to be satisfactory.

Q. Well, these toll companies—you are speaking of independent companies, are you?

A. Yes—that is, all the different companies throughout the state

that make any connections with us.

Q. Are there seven hundred different telephone companies in Texas?

A. Yes, sir.

Q. Seven hundred local exchanges?

A. Well, I say seven hundred local—there are seven hundred companies that do some long distance business and who have contracts with us on this 25%, or 121/2% basis, or some similar proposition.

Q. In these cases the Southwestern controls the long distance toll

line?

A. No, indeed not; a great many of them, the little companies in one particular have toll lines themselves, are connected with us at some point-perhaps at this exchange or some other point; in some cases their own toll lines run into our board.

Q. But in most cases where you have got this arrange-259 ment there is no long distance toll line owned by the local company?

A. Probably every local company has some toll lines.

Q. It has some? A. It has some.

Q. But then in order to get in connection with the outside world they necessarily have to use a long distance line of the South-

western company?

A. Well, not necessarily; the Mackay people are down there, the Postal people are here, the Western Union Telegraph, they all have a line.

Q. What proportion of it, have you any idea? A. No, sir, I don't know.

Q. Well, that is all.

260

Division of Tolls.

F. M. Hoag, a witness for Plaintiff, testified as follows:

Cross-examination.

Questions by Mr. Howard:

Q. Mr. Hoag, in making this inventory, just what property in the City of Houston belonging to the Southwestern Telegraph & Telephone Company did you exclude?

A. The property not used or usable for telephone purposes.

Q. Briefly, what was that?

A. That was the Houston Home Telephone Company lot and building, the lot and building acquired by the Southwestern when they took over the Houston Home Telephone Co. in Houston Heights at Harvard & 5th. A small lot 20 x 20 which was a storeroom lot owned by the Houston Home Telephone Company, and the old Taylor central office lot and building at the corner of Center and Taylor streets. Those three pieces of property. I also excluded all the dead drops. That is the wire that is not connected to working telephones, and also the wire in the buildings that are not connected to working telephones, and in residences, it being our practice in our accounting system to charge that part of the property

off at the time the telephone is disconnected. 261

Q. Anything else excluded? A. The transmitters, receivers and induction coils which are not the property of the telephone company, the Southwestern Telephone Company. Also, the furniture and fixtures used by the district men who have their headquarters here in Houston was excluded in that those men have no supervision over the Houston Exchange.

Q. Anything else?

A. I think that is all.

Q. My question involved all property owned by the Southwestern Telegraph & Telephone Company located in the City of Houston.

A. Yes, sir.

Q. You have overlooked, I believe, long distance-

A. (Interrupting.) Yes, sir, I was considering the Houston local exchange property.

Q. I said all the property of the Southwestern.

A. Yes, sir, all the long distance property has been excluded, and that is long distance switch-boards, the toll underground cables. the toll poles and wires and cable boxes, all parts of the long distance plant, including the toll test boards and telegraph equipment and other associated apparatus.

Q. That property, of course, is all owned by the same com-

pany? 262

A. Yes, sir.

Q. And is just a difference in the way you inventory and the account you charge it to, and all that?

A. Yes, sir.

Q. Matter of classification and segregation?

A. Yes, sir.
Q. Has the property you excluded as performing long distance toll purposes been used exclusively for long distance toll service?

A. Yes, sir. Q. And you have not undertaken to exclude from the inventory any property that is jointly used by the long distance service—for the long distance service and the local exchange service?

A. Every telephone in Houston connected to the Houston Exchange might be used for long distance purposes, as well as local

purposes.

Q. In fact, it is used?

A. A great many of them are, yes, sir.

Q. You inventoried, of course, all those lines and those exchanges?

A. Yes. sir.

Q. And those lines leading to individual telephones?

A. Yes, sir.

263 Q. You included all the buildings, the exchange buildings?

A. Yes, sir.

Q. Four of them, I believe, in this city?

A. Three central office buildings. Q. And another exchange, isn't there?

A. The Capitol central office equipment is housed in the Preston central office building. There are four central offices, but three central office buildings.

Q. All those central office buildings are used by the long distance

tolls?

A. In that long distance calls when completed over a subscriber's telephone, passes through the central office equipment in those buildings, yes, sir.

Q. The buildings house the long distance equipment, don't they?

A. There is no long distance equipment in the Taylor central office building, nor in the Hadley. All of the long distance switchboards and equipment is in the Preston central office building.

Q. Housed in the Preston building?

Q. It is necessary that they have a house for this long distance toll apparatus?
A. Yes, sir.

Q. And that apparatus is quite considerable, and quite expensive?

264 Yes, sir.

Q. The business done and revenues received from the long distance service is very extensive, and amounts to a great deal of money in the course of a year?

A. Yes, sir.

Q. If the earnings were polled of the long distance service and of the local exchange, the long distance service originating here, and formed one general fund, have you any idea about what proportion the revenues received from the long distance service would bear to the whole fund?

A. No, sir, that is an accounting matter.

Q. That you didn't go into?

A. I cannot answer it.

Q. Who handles that branch of the matter?

Q. Can you give me the name of the man that probably handled it?

A. Mr. Scott.

Q. Then, I believe you say that a great many of the lines, in fact, all the lines, the individual exchanges, the individual telephones are all ready to receive long distance service, and to carry on and transmit a long distance call to the subscriber, and do it whenever the subscriber has a long distance call.

A. The telephone company has for years advertised to the 265 effect that each telephone is the center of the system. are over seventy-eight thousand places in the United States that can be reached from any local telephone connected with the

Houston exchange.

Q. And they are a part and are used in that long distance service, and help to produce the long distance revenue, every individual telephone?

A. Yes, sir.

Q. Depending, of course, on the number of calls the particular individual subscriber receives. Some are very active in handling and carrying on long distance service?

A. Yes, sir, however——
Q. (Interrupting.) And some are very seldom used for that purpose?

A. Yes, sir, however-Q. (Interrupting.) But all of them are equipped and ready for that service at all times?

A. Yes, sir, but if this is a proper answer to your question: The development of the local telephone rate was carried on simultaneously with the development of the local telephone exchange.

Q. I don't know that I just get what you mean.

A. The rates for local telephone service were developed as the local telephone exchange was developed. The rates for long distance service was developed along with the development of the long 266

distance lines, and in my judgment the rate for a long distance call is between the long distance switchboards.

Q. It should be?

A. Yes, sir.

Q. But in fact, it is not. It is from the originating individual subscriber, say in Antonio to the individual subscriber in Houston to whom the message is transmitted.

A. In my judgment, no, sir. My opinion is that rate is from the long distance switchboard in San Antonio to the long distance

switchboard in Houston.

Q. In other words, it is chargeable only and property to the long distance?

A. Yes, sir. And those earnings are necessary to carry the long

distance calls.

- Q. In that event the service of continuing these calls, transmitting them and carrying them to the long distance central office, and delivering them from the long distance central office in Houston to the subscriber is in the nature of a donation by the local exchange to the toll service?
- A. Not by any means. The local exchange is credited with a percentage of the long distance earnings, which percentage is intended to cover-
 - Q. (Interrupting.) That refutes your answer of a moment ago, doesn't it?

A. No, sir. 267

Q. That is what I thought was done,—both services are recognized in making up the grand total of that charge?

A. If I can finish my answer, I think I can make it clear to you. Q. I think it is clear. My idea is clear. I would like to get

A. The earnings from the long distance lines,—that is, a percent-

age of those earnings is credited to the local exchange. Q. Exactly.

A. That, in the case of Houston, being 25 per cent. Q. We will get to that 25 per cent later.

A. That 25 per cent cares for the cost of completing those long

distance calls in the Houston exchange.

Q. That is what we will want to ascertain later on, whether it It is just facts I am getting at. Not whether or not it is a correct conclusion. But at any rate, the fact I am getting at, every individual telephone is available for handling long distance calls?

A. They advertise that fact and are proud of it.

Q. And you do it?

A. Yes, sir.

Q. And they are used?

A. Yes, sir.

Q. That is the practice and custom?

A. Yes, sir.

268 Q. The local exchange buildings are carried in the inventory as you do here—they house the long distance equipment? A. The Preston central office building does.

Q. Has offices where the long distance management is con-

ducted and carried on?

A. But in apportioning the furniture and fixtures-

Q. You are getting into that accounting business-

Mr. J. D. Frank (interrupting): Let him answer the question and he will explain it.

A. In the inventory we only apportioned a portion of the furniture and fixtures used in the handling of the business of the Houston Local Exchange.

Q. I caught that as you went over it before.

A. Yes, sir. Q. But nevertheless, the building itself is used by the general officers, a part of which is the management of the long distance

A. Yes, sir, we apportioned the office furniture and the fixtures. Q. I understand you did in your inventory, the fixtures and the furniture?

A. Yes, sir.

Q. But you did inventory the entire building?

A. Yes, sir.

269 Q. And inventoried it as the property used in the local service?

A. Yes, sir.

Q. And you inventoried every individual or local telephone?

A. Yes, sir.

Q. Substantially?

A. Yes, sir.

Q. And every sub-station? A. Yes, sir.

Q. As the property in the local service?

A. Yes, sir.

Q. You didn't undertake to set aside or apportion any part-I know you couldn't in kind, but in percentage—the part of that equipment that goes to long distance service and the part that goes

A. All of the property inventoried in the Houston exchange is necessary in the rendering of local telephone service in the Houston

exchange.

Q. It is also necessary, is it not, in rendering first-class up-to-date long distance service?

A. Yes, sir, just like local service.

Q. It is to the joint interest of both of them?

A. Yes, sir.

Q. All this wiring and local sub-stations, and conduits and all this splicing, and poles, and everything of that kind is a joint enterprise, and they are used in that way, so then it becomes

a matter of accounting, which I understand you didn't go into, to try to segregate and show how much of the property is used on one, and used on the other, if you had to make a division between the two as to earnings and expenses?

A. No, sir, the answer to that is the answer which I gave you just previously, which is to the effect that all of the property inventoried in the Houston exchange is necessary in the rendering of local telephone service in Houston. There could be no-sub-division made.

Q. You answered the question a while ago that it was all necessary also to an up-to-date, first class long distance service. You couldn't have first-class long distance service in this city today without those very things that are being used in the local service?

A. We couldn't have any long distance service in Houston with-

out telephones.

Q. That is very true; there is no question about that, is there?

A. No, sir.

Q. The local exchanges are the feeders and the revenue producers for the long distance enterprise, are they not?

A. To a great extent, yes, sir.

Q. That is, you could in the old days, before they had many local exchanges—I guess you and I remember when the telephone came into existence?

271 A. Yes, sir.

Q. And the telephone would run through a town and the people would go in there and talk over the long distance exchange, and would get their messages in that way, and it was used very seldom, very extraordinary for a man to use long distance telephone service before they had exchanges?

A. Yes, sir.

Q. And then as the business progressed and the exchanges were built up, and people began talking to their neighbors and to their wives, and then they began to feed the long distance lines?

A. Naturally the easier you make it for people to talk long distance, the greater the amount of business you get from them.

Q. So then, we get back to the original proposition that they are mutually beneficial to one another, the long distance helping the local exchange, and the local exchange helping long distance. That is true, isn't it, Mr. Hoag?

A. Yes, sir. But I wish to reiterate that the property inventoried

is all necessary for the local telephone service.

Q. I know that; that is obvious. But at the same time it is just as obvious that it is necessary for the long distance service?

A. It is necessary for long distance service, although long distance service can be rendered without the local telephone exchange.

Q. And it is also true that a very good local service could be carried on in the community without the long distance service?

A. Yes, sir, that is true.

Q. It comes right back to the point that they are mutually beneficial, one to the other?

A. Yes, sir.

273 GEORGE P. PLAYER, a witness for Plaintiff, testified as follows:

Direct examination.

Questions by Mr. J. D. Frank:

Q. Now, counsel has questioned you with reference to certain parts of the property used for long distance purposes as well as local purposes and you stated that was taken care of by certain allowances to the local exchange. Do you know how much is usual to allow the local exchange on account of long distance arrangement?

A. That matter has been gone over to my certain knowledge in over one hundred cases in which I have participated in, and an al-

lowance of 25% is the standard allowance.

Q. Is that the allowance made by the Oklahoma Public Service Commission, and the Missouri Public Service Commission?

Q. And do you know from your connection with the Commissions that they have made an allowance of that kind in nearly one hun-

A. They have.

Q. In over one hundred cases that you have been connected with? A. Yes, sir.

274

 \dot{Q} . Was contention made in any of those cases that the 25%was too low or that more should be allowed than the 25%? A. No, sir, it has always been the fixed amount.

Q. And the Commissions recognize that as a fair allowance and allowed it in various cases?

A. Yes sir. At one time, several years ago, as low as 15% was

being paid, and the Commissions raised it to 25%. Q. Do you know whether or not that is the allowance made by those Commissions at the present time?

A. Yes sir. I know that they allow that.

Mr. J. D. Frank: I believe that is all on that,

Cross-examination.

Questions by Mr. Howard:

Q. You, as an engineer, Mr. Player, have never tried in all your long experience on Commissions, have never tried to work that out to e whether that was an arbitrary allowance, or whether it would bear some relation to the service rendered by the respective companies, the long distance and the local exchange, never went into that, Mr. Player?

A. I can say that with every telephone company in Oklahoma that I made a specific set up as to the cost of handling the long dis-

tance business by the exchange and as to what commission 275 should be paid, and it ran higher than 30%. In some cases they asked for an allowance of as much as 50% for handling the long distance business, but the Commission found that 25% was an equitable amount.

Q. But they did raise it from what they had been allowing, 15%?

To 25%.

Q. My question is, Mr. Player, whether that Commission, or whether you as their engineer at any time ever got the idea by working it out, something upon a partnership basis, where they are joint enterprises in handling the messages as to what portion should be set aside to each. Whether you ever tried to work it out that way instead of taking the local exchange and just paying it enough to pay for the expense it was put to in handling this long distance business. Have you ever tried to work it out with a view of letting them participate in the profits of the transactions?

A. No, sir; I have only had experience with it as I told you.

Q. Just compensated them for the expense of doing it?

A. Yes sir.

P. K. BAKER, was recalled as a witness by the Plaintiff, and 276 in answer to questions propounded, testified as follows:

Direct examination.

Questions by Mr. J. D. Frank:

Q. Your name is P. K. Baker?

A. It is.

Q. You have been sworn heretofore?

Q. And you are the General Commercial Superintendent of the Southwestern Telegraph & Telephone Company?

Q. You have been connected with the Company for a good many years?

A. Yes. Q. You were connected with the Company prior to 1900?

Q. Mr. Baker, prior to the time of this litigation the rates which were being charged for telephone service in the city of Houston were \$5.00 per month for direct line business service and \$2.00 per month

for direct line residence service? A. Yes. Q. Do you know when those rates were put into effect in 277 the City of Houston?

A. I think it was in the early '90's.

Q. Somewhere about 1900 or 1901 or '02? Yes.

Q. Those were the rates which were in effect in the city of Hous-

ton in the year 1909 at the time the city passed an ordinance,the ordinances, which have just been read?

A. That's true.

Q. These rates have been in effect ever since then, with the exception of the period of Government operation?

A. That's true. Q. Mr. Baker, are you familiar with the statement which was filed with the City Council on December 27th, 1917, in which the Plaintiff in this case asked the City of Houston for permission to increase its telephone rates in the city of Houston, are you?

A. I am.

- Q. I will ask you to state whether or not the Plaintiff made any efforts to get the City to take some action with reference to that subsequent to December 27th, 1917, that is, with reference to the application for an increase in rates?
- A. They did. My recollection is that several communications were sent to the City authorities, also my recollection is that personal requests were made to the City authorities requesting them

278 to take action.

Q. Then along in April, 1918, the City finally gave the Company a hearing before the City Council, did they not?

A. That's true.

Q. Then, did the Company take any further action with reference to trying to get the City to pass on the application for an increase in rates?

A. They did.

Q. Between the time of that hearing in April, 1918, up until the time that the Government operation of telephone lines was taken ever on August 1st, 1918, did the Company make any efforts to get the City to pass on that application?

A. They did, frequently.

Q. Had the City taken any action by August 1st, 1918?

A. They had not.

Q. Did the City take action thereafter?

A. They did.

Q. Do you know approximately when the action was taken and what that action was?

A. I don't recall the date, but I do know that the mayor, my recollection is that the mayor recommended to the city commissioners that they refuse to grant the request of the Telephone Company, and that the mayor's recommendation was approved.

Q. Mr. Baker, at the time this ordinance in 1909 was passed the rate in force at that time was one that had been voluntarily

put in by the Company?

A. It was.

Q. The Company had never undertaken at any time to collect

higher rates than those in force?

A. Excepting, Mr. Howard, as I testified before, that years ago they put on a charge of \$80.00 in Houston for long distance telephones. At that time they were using what is known as Blake transmitters and at that time it was long distance transmitters

Q. But for this same character of service you never charged more . than \$5.00?

A. Yes, because everything now is equipped with long distance transmitters; in other words, it is the same class of service and same kind of instruments which at one time we charged \$80 00 for and for which we are now charging \$60.00 a year.

Q. During what period was that rate in effect in Houston?

A. It was in the early 90's. Q. Very early 90's, wasn't it?

A. Yes, sir.

Q. It was probably prior to 1895?

A. I should say so.

Q. Then qualifying it in that way, say that from 1895 on you had not undertaken to charge any higher rate than in force in 1909?

A. That's true.

280 Q. And that was voluntarily put in by the Company?

A. That's true.

Q. And that rate was never sought to be changed by the Company until December of 1917?

A. That's true.

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Division of Tolls.

J. C. Kelsey, a witness for defendant, was recalled and testified as follows:

Direct examination.

Questions by Mr. Howard:

Q. Under subdivision four of that heading you have an item of "Toll investments chargeable to Houston," of how much?

A. \$808,621.00.

Q. Now, Mr. Kelsey, how did you get this \$808,621.00, that you—

A. (Interrupting.) I went to the company's books and found their total toll earnings for the entire territory.

Q. How much did you find them to be?

A. \$4,667,523.00.

Q. Now then, why from merely finding that fact, did you state up here, \$808,621.00, as a part of that investment to be allocated to Houston?

A. I took the proportion of four million that this item totaled and as against this \$441,029.80. Let- see, I have forgotten what percentage that is.

Mr. D. A. Frank: I can tell you what percentage it is.

282 It is the first one of the four that——

A. (continued.) (Interrupting.) Don't bother me today, I am sleepy. I will be ready for you tomorrow. Now, I took the percentage then of the total toll business governed by the company in

1919, of \$4,667,523.00, in proportion to the earnings of Houston, or \$441,000.00.

Q. (Interrupting.) Before we get down to the earnings, let's find

out why you didn't set up this \$808,621.00.

A. That is what I am getting at. It is a rather tedious transaction. This proportion of the total company's tolls of \$4,667,523.00, to this \$441,000.00, assigned to Houston, and that is practically ten per cent. Now then, the company's books show that the entire investment in the toll line properties is \$8,602,000.00. Now you take that, practically ten per cent, it is about nine and a half, would give you that \$808,621.00.

Q. Then in other words, you allocated the investment in the entire

toll equipment to Houston?

A. Yes, in proportion to the total other toll lines. That is the only equitable proposition.

Q. Upon a certain equitable percentage basis?

A. Yes, sir. Houston subscribers use these toll lines about ten per cent of the total.

(By the Master:)

Q. Wait a minute; you say over what territory, now do you get your-

A. (Interrupting.) Over the entire territory.

Q. Over the entire southwestern territory?
A. Yes, every dollar that belongs to the Southwestern Company in question.

(By Mr. Howard:)

Q. It is within the State?

A. Yes, within the State. It is in this circle here.
Q. The Southwestern operates only in Texas?

A. If this proportion is carried out, it will be about sixteen and two-thirds per cent of the subscribers.

Q. The people in Houston use ten percent?

A. Ten percent of the total toll business originates here in Houston.

Q. Of the entire State of Texas?

A. Yes, sir, of this Company. Therefore, I allocate, using these lines, ten percent, and charge ten percent investment to Houston. That gives us \$808,621,00.

Q. Now you have allocated it on the basis of about ten per cent?

1. Yes.

Q. How does that compare with the percentage used by the company in allocating its different charges throughout the State?

A. How's that?

Q. Did you ever check that?

A. How's that?

Q. You know the company in allocating its general expenses to the different exchanges, uses a certain percentage for Houston.

A. Sure, I made a preliminary total here of the showing for the whole company, \$26,500.00 in the City or sixteen and one-half percent in the City. I find that the traffic expenses of the entire company are \$2,592,158.00, and assigned to Houston is \$418,005.00, or exactly sixteen and a half per cent. But when you get the maintenance and depreciation, we find that nineteen percent of the maintenance and depreciation is assigned to Houston.

Q. Have you noticed or checked up the general expenses, like the general office expenses and what portion of that expense is allocated

to Houston?

A. General office expense for the whole year, for the company was \$337,384.00. They have assigned to Houston, \$48,640,00.

Q. Well, what is the percentage?
A. It is about fifteen percent.

Q. Fourteen and a fraction?

A. Yes.

Q. Or practically one-seventh? A. Practically one-seventh.

Q. Now, if you take their figures and use that percentage, that would increase the allocated investment, the entire toll investment, it would increase the total toll investment in Houston, somewhat, would it not?

285 A. Yes, we are not trying to allocate on the basis of subscribers or the basis of value. It is the actual use of those toll lines of Houston subscribers as compared to the other subscribers in the system. This is the most remarkable toll earning company in America.

Q. And taking that allocation on that basis, it amounts to \$808,-

000 -

A. (Interrupting.) Yes, \$621.00.

Q. Now, then, you add that to the local value as you have found it and it gives you a total of how much?

A. \$4,855,392.00.

Q. Upon which the company should earn a return in this locality?

A. In Houston, yes. Q. All right. Now, Mr. Kelsey, that is your method and your conclusion in regard to the value of the property used by the company in this city.

A. Yes.
Q. And upon which they can earn a return?

A. Yes.

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Toll Division.

Mr. KELSEY again resumed the stand for further cross-examination.

(Questions by Mr. D. A. Frank:)

Q. Is long distance connection worth anything at all to a local exchange?

A. No, it is a liability almost.

Q. A liability?

A. Yes, sir. Q. Have you always been of that opinion?

A. Absolutely.

Q. How many lines are there around Houston, do you know?

A. No.

Q. Would you be surprised if I were to say that there were 50 lines going out of Houston?

A. I wouldn't be surprised. Judging from the pay-roll.

Q. You have got a number of lines here?

A. I don't know.

Q. There are 17 railroads and there are usually lines running out the railroads. It wouldn't be out of reason to say there are 30 lines running out of Houston?

A. I can't give you any idea until I know. I don't know busi-

ness at all.

Q. Let's assume that there were 30 lines running out of 287 Houston, would it hurt the local exchange to have one of those lines cut?

A. Well, not on the 25% basis. They are losing money on that

proposition as it stands.

Q. Would it hurt the exchange to have half of them cut out?

A. They would probably make more money by losing them under those contracts. You are speaking now of the benefits of the toll, are you? Are you going to argue that long distance is a-

Q. (Interrupting.) Would it hurt the local exchange to have all

the long distance lines cut?

A. Well, I don't think it would hurt it materially because 97% of the calls, as a rule, are handled around right in the center.

Q. Don't you know that a lot of people wouldn't take local service unless they had long distance lines?

A. No.

Q. Don't you know that in building up an exchange of 27,000 stations that necessarily a great many people wouldn't have taken-

A. (Interrupting.) You can't conceive of a situation whereby a man wants the long distance telephone and not the local connections. Look here, communities with a thousand grew up without any toll The Duluth Telephone Co. got along well without the long distance lines, and Minneapolis and St. Paul.

Q. Mr. Kelsey, suppose we had some lines out of here, from here to Beaumont—You know where Beaumont is, don't you, 288

pretty good little town over in East Texas?

A. I suppose so.

Q. Now suppose that was owned by the Texas Long Distance Co. and they were to cut off connection entirely with our exchange here, and we had a contract, wouldn't we be damaged by cutting off those

A. Well, you got many a toll line which is an independent company.

Q. That don't answer my question. Wouldn't we be damaged? A. Not on a 25% basis. You would probably save money.

Q. Probably save money on the basis of 25%?

A. Yes, it is costing this property, the time you count every item that goes into it, a good deal more.

289 LAMAR LYNDON, a witness for defendant, testified as follows:

Direct examination.

Questions by Mr. Howard:

Q. Oh, yes, I understand you can tell how much money was spent in Houston, but I want to know for the local service,—that's what we are trying to get at. You see, as I understand this situation, they are working 2 plants here, so to speak, they have got two industries,—they have got,—we can separate them in our minds anyhow, to long distance service, and they have got a long distance service plant and they have a local service plant. I am speaking now as a layman, and not in the language of the American Tel. & Tel. Company. Now, Mr. Lyndon, are these two enterprises as conducted here by this company, we call it the Southwestern, because it suits Mr. Frank better, are the expenses of each one kept definitely separated?

A. I understand they are not. I have requested the separate expenses of the two and have been told that there is no separation and no way to obtain it.

Q. Well, these local lines here terminate nearly every long dis-

tance call, do they not?

A. Certainly, the subscribers' stations are the terminals of the

long distance service.

Q. Well, the lines then, the local lines are all engaged in promoting and handling calls for the long distance part of this dual enterprise?

A. Yes, obviously.

Q. Now, is there any way of telling what part of these operating expenses would handle and terminate the long distance calls proportionate to the expense of handling the strictly local calls?

A. I have been unable to obtain it.

Q. The company has even confused its accounts in that regard with a lot of general costs in the way of operation that have been incurred in handling both of these enterprises and there is no way to say which,—how much was incurred in one enterprise and how much in the other?

A. No, except by certain assumptions, and the attempts to ap-

proximate it.

Q. Then the company as I understand it, hands this exchange an arbitrary amount of 25% or something like that on outgoing calls and say you can have this for what you have done for us. That's the way the handled it, I believe?

A. It is.

Q. Nothing definite about it There is no relation apparently

between the 25% and the value of this local plant used in the operation except that it bears some relation, because as they take it a certain amount of the service rendered by the local plant is another amount, but what relation one bears to the other, that is not apparent?

A. No, it is an arbitrary sum of money, which is a proportion

of the gross income from tolls and is not related to any other factor.

Q. You say nearly every part of this local equipment is engaged

in the long distance toll business too, is it not?

A. A large proportion of the subscribers' stations are used for toll equipment and they constitute practically the only terminals for long distance business.

Q. (Interrupting.) Now, My. Lyndon-

A. (Interrupting.) I am going to finish, Judge. It is physically impossible to separate the long distance from the local system because of these facts.

Q. But, now aside from the fact that these private lines and the local lines, subscribers' stations, terminate these calls, what other service is rendered by the local exchange in the handling of tolls?

A. Well, the local exchange must necessarily make the connection between the toll lines and the local lines; it must perform a definite service for each call, either incoming or outgoing,—it must keep the records—

Q. (Interrupting.) And it is not shown on this company's books, and seems to be incapable of ascertainment just what the expense of handling these long distance messages is?

A. I understand that those costs have not been segregated

and I know that I have been unable to obtain them.

Q. So that this company stands in the attitude of having complicated these accounts and then comes up here in trying to make a disclosure—

Mr. D. A. Frank: He did not state that; he said it was a physical impossibility to dive them.

(By Mr. Howard:)

Q. Well they are in the methods of the company, in their opera-

tions that they give them, they complicate these accounts?

A. I should say they simplified these accounts by getting the entire account in one account and not segregating it; it is very much more simpler than to separate them to so keep them, but it is impossible for anybody else to determine exactly—

Q. (Interrupting.) What is chargeable to one and what is charge-

able to the other?

A. Yes.

Q. And to that extent they are complicated and confused?

A. If there is desire to segregate them, to that extent. If they wanted to distribute the funds pro rata to this it would be impossible to do it.

Q. If a man does that he confuses and complicates the ac-

counts, does he not?

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A. He confuses the accounts, I couldn't say that he complicates them, because this is what it is: if you go to take it off yourself and not segregate them-

Why aren't they complicated; if a man sells Q. (Interrupting.) one hundred bushels of wheat and gets a dollar a bushel and keeps account of the expense of handling it that's a simple transaction?

A. Yes, sir.
Q. But it's because the same man handles a lot of barley and a lot of rice and makes no separation of the expense, then he is complicating them, is he not, and confusing them together? He has got a complicated account so that in order to render a statement in regard to each-

A. (Interrupting.) It is confused to the extent that a statement

cannot be rendered to each one pro rata.

Q. And that is what this company has done, it has handled these two enterprises, and handled two funds with a common organization and has made no attempt to ascertain as the service is being performed how much is rendered in the performance of one service, and how much in the performance of another.

A. I understand that to be so; it has been so stated to me, and I

have been unable to get the segregation.

Q. Because they didn't show the segregation?

A. None that we have had access to.

Q. Then the company is in this attitude of having confused the accounts so far as the cost of operating this local exchange is concerned, and they come before the court saying we can't tell you what this local service has cost, but the two services have cost us so much money, we are handling it arbitrarily and saying that the service that we do not care to investigate will be so much, and we ask you in determining whether we are earning a return or not to charge in the rest of the expense to the service that we are investigating.

Mr. D. A. Frank: I object to that as being a long involved state-The rules of evidence ought to be approximated in the Federal Court, and I object to it upon the ground, in the first place, that it is a repetition for about the third time of the same thing and in the next place it is full of statements that reflect upon the company, and it is trying to assume that what the witness has testified is not the case,—that it is impossible to make such changes and divisions in the handling of these two accounts as the witness has already designated is physically impossible. It looks to me like it

is not a proper question.

The Master: The question is somewhat involved. 295

ahead Mr. Howard.

Q. Read the question back to him, will you please? (The question last above was read back to the witness by the reporter.) Let me state that question, Mr. Rosenthal, and take it down as I state it, will you please.

Mr. Lyndon, the attitude of the company as I understand it, is that they are conducting two enterprises here that they have confused and combined together the cost of the service on the two dif-

ferent enterprises and having done that they come before this court saving we are not able to tell you what this service that we are investigating has cost, but we submit to you the amount of the cost of both services and we propose to hand—the charge to the service that we are not investigating a certain arbitrary amount, and ask you in determining the net return to charge the service that you are investigating with the remainder of the combined cost. Is that the attitude of this company so far as disclosed by the books and the information you have received?

A. Substantially that is as I understand it; that the company does not separate the cost incurred in Houston for the two services. That it furthermore allocates from the other offices sums of money

disbursed which for 1919 amounted to \$119,357, expenditures not being locally incurred; that there is then credited to the local exchange, as against the total local expenditures plus the allocated charges, the entire local receipts for local service and 25% of the local receipts for long distance service.

understanding of the situation.

Q. Then in determining and trying to bring some order out of chaos in regard to their earnings, and expenses, we are met not only with these circumstances that I have just detailed, that on account of the two enterprises that they are carrying on, and not keeping the costs separately, but further meet with the trouble, the same proposition that they are conducting many other exchanges long distance service, but many other points in trying to arbitrarily allocate to this exchange certain expenses that they may or may not have incurred in operating this exchange?

A. That is true.

Q. As an illustration they allocated, I believe, did they not, undertake on their books, the income tax?

Q. And at the same time claiming that so far as this exchange is concerned they have made no earning upon which an income tax would rest?

A. That's true. They also allocated pensions, and I understand that there is not a single dollar paid for pensions in Houston. Maybe since my information as to pensions

has developed, but at that time, no money was paid for pensions here, but there was an allocated charge for it, and charges of that nature, that is, the money is not locally expended and the expenses are not locally incurred.

Q. Then owing to their inability to come before the City Council or before the Court and say how much this service they are rendering the public is costing them, they resort to such methods that they have adopted for themselves and say you must take this calculation and this theory and this estimate in the place of our actual That's the best they have undertaken to do, and as expenditures. you say, the best they can do?

A. Well, it is the best they have done. I have certain impressions however, that they are not sufficiently backed up by facts which I have been able to discover to make it a matter of testimony, but I

am assured in my own mind that the officers of this company have a pretty fair idea if not an exact one of what the toll service is costing them. That is my belief and it is only a belief.

Q. If they have got any such thing they haven't carried it forward

and you have never seen any set up of it?

A. Never, but I have been informed from sources that I regard as reliable—

298 Mr. D. A. Frank: I object to his information unless it comes from the plaintiff in this case. I think there ought to be a limit to hearsay testimony.

(By Mr. Howard:)

Q. Did you hear it from any of the officers of this company?

A. No.

Q. Well, we won't go into that. Now, Mr. Lyndon, being confronted with this chaotic condition here with regard to the expenditures and the operating cost, and to some extent with the revenues that have been derived, you have simply declined to follow the arbitrary methods of trying to arrive at the proper results the company has advanced and have brought before the Court here certain other theories that could be followed in trying to get a solution of this problem, in other words, rather than to take the burden that the company has failed to discharge, and under the circumstances trying to arrive as nearly as accurate result as can be arrived at.

A. Yes, using always the sums of money that have been set up on the company's books as the basis on which these statements have been

made.

Q. Well, now, Mr. Lyndon, the first method that you have pursued here, I believe you have pursued the method of setting up all these toll revenues and earnings of this exchange?

A. Yes, all the toll revenues. That of course, is for all outgoing calls, and the company here collects the incoming

calls without charge.

Q. You do that for the reason that the expense of operating the tolls have been charged here?

A. Just so.

Q. And that the operating expenses of these toll lines have been allocated to all the different local exchanges throughout the territory leaving them fully paid with no operating expenses chargeable to the toll lines?

A. I understand that to be the case.

Q. That has been done here,—they have allocated to this exchange all the operating charge of the toll lines?

A. Yes.

300 LAMAR LYNDON, a witness for Defendants, testified as fol-

Direct examination.

Questions by Mr. Howard:

Mr. Howard: I introduce this as Lyndon Exhibit No. 15, on the question of Toll Lines, as follows:

Q. Mr. Lyndon, have you made some examination of the books in regard to the matter of the toll lines of this Southwestern Telegraph & Telephone Company?

A. Not personally. I have a statement which was given to me by Mr. Kelsey, and he said that he had himself stopped and looked

at the books and gotten this figure from them.

Q. Which figure was it now that you-

A. (Interrupting.) That the book cost of the toll line property is \$8,602,359.00.

Mr. Howard: Now, we were furnished that statement, but it seems that the company omitted something from the statement.

Mr. J. D. Frank: I think I wouldn't make that statement. 301 Mr. Howard: Why, Mr. Scott said so, he said that they had omitted the right of way.

Mr. J. D. Frank: He didn't say that, however, Mr. Howard.

Kelsey went up and saw the books and took that record himself.

Mr. Howard: Well, he went up and asked for the right of way books and took it off. That is what I don't understand is why we get these figures and books-

Mr. J. D. Frank: Mr. Kelsey went to the company and got these

data himself.

A. This exhibit, I may state is based on this figure being correct. Insofar as this figure is incorrect, if not true it is incorrect, then just by that proportion will the conclusions be changed.

Mr. D. A. Frank: I don't see the materiality of the exhibit. doesn't have any bearing on the Houston exchange at all. are not trying a toll rate case here.

Q. What does this exhibit show?

Mr. D. A. Frank: Hearsay founded on hearsay.

302 Mr. Howard: Why is it hearsay; it is from your books. A. The statement which I have and which purports to be a statement from the company's books-

Mr. D. A. Frank: But which is not.

A. (Continuing.) And on which statement this is based, shows the following: That the annual toll receipts, gross, for 1919 were \$4,667,000.00; that the book cost of the toll property, that is, of the toll lines, and excludes the property which is included in the inventory of exchanges, is \$8,602,000.00. A high percentage condition for a pole line is 80%.

Mr. D. A. Frank (interrupting): That is according to your theory. A. That is according to my knowledge, sir. I have built many

pole lines.

(By Mr. D. A. Frank:)

Q. (Interrupting.) One that had been completed in three days

would be the same kind-

If we accept this as only three days I will A. (Interrupting.) modify that, but I have understood that toll service has been rendered here for years.

Q. Go on.

A. That in a pole line that has been erected for a number of years a percentage condition of 80% is high.

Q. And you never took an inventory in your life and still

you say that?

A. I never said I never took an inventory in my life. I would still say that if I had never seen an inventory because I know that to be a fact.

Q. Go ahead.

A. Therefore, if the book value as set up is correct, the present value of this property, with due regard to depreciation, is \$6,682,-The depreciation has occurred and it has obviously been collected because we know that the fund exists. Now, taking the maintenance of the pole line at 3% per annum-

Q. Where did you get your 3%? A. Maintenance at 3% is a right fairly good figure for maintaining pole lines, depreciation at 8%, and taxes and incidentals at 2%, makes a total of 13%, which it costs the company to own that line and keep it maintained. Now, that applies not to the depreciated value, but to the original cost value, and 13% of \$8,602,000 is \$1,118,200.00, which is the annual expense this company is subjected to to maintain these lines. The income required to pay 8%

of \$6,682,000.00 is \$549,000.00. Now, the 8% income 304 added to the cost of maintaining the lines comes to a million,

six hundred and sixty-seven thousand, two hundred dollars (\$1,667,200) per annum; so that this figure of \$1,667,200 is 36%, slightly under, but roughly 36% of the gross income. So that 36% of the gross income is a load to the toll lines, all costs would be met and an 8% of the value as a net return would be obtained. That would leave as a balance assignable to the localities where the money had been actually collected, localities where the money had been paid of 64%, which would be the proper proportion to allot between the toll lines and the local exchange.

Now, considering that from another aspect, that is, assigning 25% to the local exchange, that leaves 75% to go to the toll line property; 75% of the total income gross for 1919 amounts to \$3,500,600. The toll line costs are \$1,118,200. The balance, therefore, is net profit applicable to dividends or whatever purposes the company might determine, is \$2,382,400. Now, this sum is slightly over 34% profit on the present value, that is, 80% condition of \$8,600,000

book cost.

305 (By Mr. Howard:)

Q. So then, Mr. Lyndon, we have a property here engaged in a dual enterprise, one a local exchange, and the other handling long distance tolls. It is all used interchangeably, is it not, in these two

enterprises?

A. Necessarily, the local exchange and its apparatus, strictly local apparatus forms the terminal for the incoming and outgoing calls both, and furthermore, the strictly toll apparatus in the local exchange is a part of the equipment, the maintenance, depreciation and interest on which are all charged to the local exchange.

Q. And in addition to that, all parts and all lines are used in

initiating and terminating calls?

A. Yes.

Q. Now then, we find here that in the manner of bookkeeping, going to the manner of bookkeeping, and this company that operates all these properties, we find that this local exchange is showing a red figure where a black figure showing a net income should be, and the toll lines are showing 34% net return?

A. That is the case, if these initial figures as taken from the books are correct. As I understand it, the 25% just about meets the cost and I believe in 1919 it showed a slight profit. I

know, as far as we were able to determine in 1914 and in 1918, there was some loss due to the fact that 25% did not reimburse

the plant for all the expenditures it was under.

Q. So then, this plant, this local exchange here, in addition to performing the function of earning the amount collected from the local subscribers has also been instrumental in carrying out another enterprise which has been productive of a 35% annual net return?

Mr. D. A. Frank: On his scheme.

A. On these figures. The method of calculation is, of course, absolutely correct.

(By Mr. D. A. Frank:)

Q. You mean the multiplication is correct?

A. No, I mean, the method of reaching the conclusion. Now, if the initial figures with which the computation is started are wrong, the final conclusion—

Mr. D. A. Frank (interrupting): If a man would admit your premise.

Cross-examination.

Questions by Mr. D. A. Frank:

Q. Where did you get your figure of 3% maintenance?
A. Personal familiarity with pole lines.

Q. All right. How many pole lines are you familiar with?
A. I built a pole line 37 miles long.

Q. I know you did build a pole line 37 miles long, but how long did you operate it?

A. And I kept in touch with that line for about 6 years.

Q. While you were a consulting engineer you kept in touch with that line for about 6 years?

A. Well, I was in the practice of consulting engineering. Q. Well, in 6 years could you tell anything about what the maintenance would be in a line that had been es- for years and years, say 25 or 30 years, could you even draw a conclusion?

A. Yes, you could tell about what the maintenance would be. Q. All right, take the next one, depreciation. You take 8%

for depreciation, do you?

A. Yes, on the whole thing.

Q. And in the exchange you take 3%; why were you so generous to us as to give us 8% depreciation on toll lines and only take about 3½ or 4 per cent, on the local exchange?

A. Because the cost of your pole lines is made up of wooden poles.

Q. Wooden poles?

A. Yes, and cross-arms. Q. And they rot?

A. They do.

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Q. Rot and fall down?

A. I don't know that you let them get that far, but they are attacked by rot and when they get to a certain point have to be replaced.

Q. Where do you get your two per cent. for taxes?
A. Taxes is more or less an estimate. It is assumed that the taxes paid are not on the basis of the actual costs of the property because they never are

Q. Well, don't you know that we have a gross receipts tax of

11/2%, the very first reel out of the box?

A. Well, that leaves 1/2% tax on the balance of the property. Q. Did you ever hear of a half a cent anywhere in the world? A. I didn't know you were subject to municipal taxes on your poll lines.

Q. We are subject to State and county taxes. A. You are subject to State and county taxes.

Q. Did you ever hear of 1/2% State and County taxes? A. If applied to the actual cost, 1/2% will actually cover.

Q. Don't you know that frequently the State and county taxes

are a lot more than 1/2 %?

A. Never heard of it. I simply know this; that the prop-309 erty I do know of that has been given in taxation in this state never has been taxed on the basis of its actual cost.

Q. And you didn't take into account anything on Federal income

tax either, did you?

A. Oh, no. Now, another thing is-

Q. (Interrupting.) That is another thing you throw out.

A. The 1½% on gross income taxon thing. The 11/2% on gross income taxes amounts to only three-quarters of one per cent applied to actual costs, because the gross income was only about half the cost to which these taxes were applied.

Q. What about operation?

A. The operation was paid for right here in the exchanges; what operation is there?

Q. You are certain now, for the whole state—is the operation

for the entire state paid by the local exchanges?

A. I understand the operation for the whole state is paid by the local exchanges.

Q. From whom do you understand it?

A. I don't understand that they can terminate anywhere but in the local exchanges.

Q. From whom did you get your idea?

Mr. Howard: Get it from Mr. Scott for one thing.

310 A. I got the idea from him that you must have an instrument to terminate, and I am unaware of a single instrument placed anywhere by the company for terminal, except inside of a

municipality.

Q. Did you know that in the City of Waco and in the City of Dallas we did not own the local exchange and in quite a number of other local exchanges in Texas we don't own the local exchange but that all of the-and that the operation is an expense for toll purposes.

A. I understood that in the City of Waco that was the condition

and I also understood-

Q. (Interrupting.) Did you know that in Dallas alone there was something line \$200,000 paid for toll operation?

A. I heard Mr. Scott say so.

Q. So your figure would be wrong by that amount, wouldn't it?
A. The figure would be wrong by that amount if it wasn't offset by somewhere else.

Q. Now, you have assumed that the toll property that is in the

books, that \$8,602,000 is now worth \$8,600,000.00?

A. Yes, a very high assumption.

Q. You have assumed a very high condition for that plant when you never saw a foot of it?

A. Don't have to see it at all. I know that nobody ever keeps them above that, or has ever attempted to, and if they do attempt to, it would impose an unusual and unnecessary burden. It would mean that every pole there, that the average age of those pole lines would be only about three years, of every pole on the circuit.

Q. For instance, this figure of \$8,602,000 has no central office

equipment in it at all?

A. Not at all.

Q. And yet in Dallas, and Waco, and Tyler, Denison and Sherman, Temple, McKinney, Texarkana and quite a number of other pretty good sized cities in Texas there are toll switchboards that are not included in here and still you calmly sit up there and make your figures on the basis that it is?

A. Are they included in there or not?

Q. They are not included in there, but they should be.

A. They should be included in there and the costs included in there before the conclusion is reached.

Q. So you have nothing in here for the property that is obtained in those exchanges—

Mr Howard (interrupting): It is your books we got those figures from.

A. That is what I understood it to be. I made the state-312 ment at the beginning that if these primary figures that were handed me as coming from your books are right, the conclusions are right. Now, if they are not, these final figures are wrong by just that proportion.

Q. Did you know that Mr. Kelsey went to Dallas on Sunday morning and left Sunday afternoon and in between trains asked to see certain statements and to take his figures down? Without asking any body about them?

ing anybody about them?

A. I didn't know about that.

Q. All of this is based on hearsay from Mr. Kelsey?
A. It is based on a written statement of what they are.

Q. Now, you have not included a cent in here for a general expense, have you?

A. General expense? You mean, the allocated charges?

Q. Yes, anything, the President's salary, or the General Manager's salary, or anybody else's salary.

Mr. Howard: I asked Mr. Scott to enumerate all the expenses that are allocated.

Mr. Scott: I never answered that particular question.

A. It has been my understanding that all the general expenses are allocated to the various exchanges.

Q. Well, a part of it could be allocated to the various exchanges and a part of it would be allocated to the tolls, wouldn't it?

A. Not necessarily.

Q. Is it your idea to do that by dividing it among the local exchanges and nothing go to toll?

A. I have nothing to indicate to the contrary of it.

Q. That's another thing growing out of your experience.

A. That has nothing to do with my experience as an engineer. I don't know what your heating systems are in your exchange at Dallas. That has nothing to do with it.

Q. But still you have the temerity to come here and make figures

on something that you don't know anything about?

A. No, that isn't true. In the first place it doesn't require temerity; it doesn't require the special ability to calculate.

Q. Just ability to put some figures in, just a mere sort of a mathematician?

A. Now, I qualified this whole thing at the beginning. I will state it to you again, that the method pursued is absolutely correct.

Q. In other words, your multiplication is correct?

A. No, the method; that if the figures with which I started are

incorrect or any of them are missing, that by that propor-

314 tion the conclusion is in error; that is all.

Q. Well, the same report that Mr. Kelsey examined from which he got this showed that the net telephone earnings for the year for the entire state were \$1,958,757.00. Do you think that we lost money in every exchange in the State and thereby made \$2.282,400 on the toll?

A. Mr. Kelsey's statement here which I have been using and that was obtained in the manner that I have subscribed, shows the net

receipts applicable to dividends, \$3,031,673,

Q. But you don't !- now whether that is correct or not?

A. Well, I simply know that they were handed to me as having come from the books. I accepted them as correct. I made this statement at the beginning, if they are correct-

Q. (Interrupting.) And you get on the stand and swear to what

Ketsey tells you?

A. I never made any such statement. I never intended any such thing. I made a perfectly clear statement of what it was based on and how it was obtained; all you have to do is to say that those figures are incorrect and give us the proper figures.

Q. You haven't got a single dollar in here for supervision of the toll lines, they are just going to operate themselves, just run without any officers or any persons to manage or control them, without any supervision whatever, not a dollar, have vou?

A. All the supervision that is necessary is supplied in the maintenance and depreciation account.

Q. Maintenance and depreciation is supervision?

A. You can't maintain them without supervision; nothing automatically goes and replaces a pole because it is worn out.

Q. Depreciation just happens and manages the plant-A. Depreciation just happens and manages the plant and every-

body else and you can't escape.

Q. If your figures are wrong in the elements I have mentioned, they are wrong

A. If they are wrong or in any one of them, the conclusion would be wrong.

(By Mr. Howard:)

Q. You recall when you were here before wanting a statement in regards to the tolls, the whole amount of the toll property and the operating expenses and everything connected with it; it was desired. Has there been any effort upon the part of this company, so far as you know to furnish that information?

Mr. D. A. Frank: I object to that as being as far fetched and as far away as anything could be.

316 (Argument of counsel omitted.)

Q. (Continuing:) Mr. Lyndon, Mr. Frank has gone along stating that several items of property were toll property that were not included, in that eight million and something. You know nothing about, the information that has been furnished does not indicate the correctness of those statements, does it?

A. No.

Q. There has been no books furnished to support Mr. Frank's suggestion in that regard?

A. None introduced here.

Q. Then from—they have made no disclosure from the books-

Mr. D. A. Frank (interrupting): He has not looked at any of the books.

Q. (Continuing:) —so far as you have known of, other than what has been furhished?

A. No, none that I know of, or that have come before me.

Q. You heard over a month or six weeks ago this line of inquiry pursued indicating that we were interested in knowing the toll values and toll expenses and toll operation.

A. Yes, I remember Mr. Kelsey's giving some testimony on that

subject, and of course I may state parenthetically—Q. (Interrupting.) You will rest upon this statement 317 then until it is disproven by the books?

A. Anything that the books will disclose that belong in a set up of this kind should be included in it and when I started reading this document, I started with that preface.

Q. They have not been discredited or refuted in any way by the books?

Mr. D. A. Frank: Why, I think that is a conclusion to ask this

witness to pass on his own testimony. A. Well, nothing has been introduced since this exhibit that

causes a definite and specific change in any factor. Q. Your attention has been called to nothing from the books that would cause you to change your testimony?

Mr. D. A. Frank: You don't seem to understand Mr. Lyndon is not the judge in this case.

(Argument of counsel omitted.)

Mr. Howard: I indicate to them now that the defendant in this case requests from the plaintiff the production of its books show-

ing its total toll value of every kind and description, no matter under what head located.

318 Mr. D. A. Frank: You mean for the entire world?

Mr. Howard: No, for the entire State of Texas, owned by the Southwestern Telephone Company, its statement of all toll revenues retained by the Southwestern Telegraph & Telephone Company of every character, no matter under what head or subdivision it may be set up on the books of the company. (c) All operating expenses of the toll lines in the State of Texas, both those that are separated and stating those that are allocated or included in the expenses, operating expenses charged to the local exchanges. (d) And all data from which may be computed the net earnings of the toll lines as distinguished from the local exchanges throughout the State.

Mr. D. A. Frank: Is that all? Mr. Howard: That is all.

Mr. D. A. Frank: Now, in reply to that we will say that we will furnish to the City of Houston any and all information that it desires on anything connected with our books at any time, but we don't agree for this case to be continued one single solitary

minute on account of giving them that information. This case has been proceeding now for several months; they have sent a witness to Dallas; they have sent witnesses to see our books in Dallas and in St. Louis and in Houston, and they have had ample time to prepare anything they want. We think that our position is certainly well taken for the reason that what he is asking him is entirely immaterial to any issue in this case. The issue in this case is first, what is the value of the property, used and useful, in serving the public in the City of Houston; second, what are the revenues and expenses in Houston; and third, whether or not the rates that have been prescribed by the ordinances of the City of Houston will be confiscatory of the company's property here in Houston. We take the position that the information being asked at this time, after the city has closed its defense,—

Mr. Howard: I haven't closed it.

Mr. D. A. Frank: You have closed your defense and got your witness back now in rebuttal.

Mr. Howard: No.

Mr. D. A. Frank: Well, let me finish, and then you can make all the statements you want to. After you have finished with your witnesses, you come in here and ask for information

which you know it is impossible for us to bring in, any books at this late day, without a delay; and we say that the only plain purpose of asking for the information would be for delay, because it could shed no light on the issues in this case, even if the figures put in by Mr. Lyndon were correct, which they are not; even if we had admitted that the toll lines were making 35% or 50% of 100%, it would still make no difference in this case. This case has been it would still make no difference in this case. put up by Mr. Lyndon in every conceivable form. He has put it on the basis of putting in 100% of the toll, and in allocating any of the toll plant to the city of Houston, and even then shows a loss, on one-third or one-half of your values in this city, shows a loss of over \$100,000.00, on the very best estimate that the witness makes, so that no figure which could be put in by Mr. Lyndon after such an examination could change the result in this case whatsoever. Mr. Lyndon on every assumption that he has made in this case, absolutely every assumption, has found that the company lacks a certain amount of getting a fair return. Therefore, we say it would be unfair to this plaintiff at this time to take any action, Your Honor,

that would cause a further delay. Now, I can't see the
321 object of it except merely to string out the hearing. We
have attempted to make a full disclosure here in spite of what
Mr. Howard says. We have tried to bring in with the fullest detail

both our plant inventory, our appraisals, we have done everything we could to make a fair disclosure, let the court have every bit of information, let the witnesses on the other side have every bit of information, furnished them with every figure they asked for, although there was no duty resting on us as a plaintiff in this case to give them everything. The duty resting on us was as a public service corporation in the City of Houston, the duty has rested upon us to furnish them, as a regulating authority, with all information, and we have been doing that for several years and are still willing to do that, but as a litigant in this case, the duty did not rest upon us to make out the defendant's case. The duty rested upon us to present the facts to the court fairly and squarely so that the court will know how to decide the case, but counsel has constantly made the statement that he thought the duty rested upon us to furnish them with information.

Therefore, I say, Your Honor, that no order ought to be made at this time that would in any way delay the final submission of this case to the court. What is the object of the informa-

tion you have asked for, Mr. Howard?

Mr. Howard: Now, we may be wrong upon this theory, but I think not, but now, we have undertaken to make proof and you have questioned Mr. Lyndon and attacked his testimony, because you say it is hearsay and an inaccurate statement from your books that he is basing it upon. Then I say that anything in that statement that we have set up either as a statement from your books, that you should not attack it, but you should supply it because the information is peculiarly within your control.

Mr. D. A. Frank: It is hearsay on hearsay. Mr. Howard: But, Mr. Kelsey has testified to it.

(Further argument of counsel omitted.)

Mr. Howard: I make this demand and insist on it.

323 Testimony in Support of Assignment of Error No. 3, Relating to the American Telephone & Telegraph Company's Service Contract of 4½%.

C. A. Gates, a witness for plaintiff, being duly sworn, testified as follows:

Direct examination:

My name is C. A. Gates, and I live at Pallas, Texas. I am Vice President of the Southwestern Telegraph and Telephone Company. I have been in the telephone business since the 7th day of February, 1885, having entered the business on that date.

I began as a night operator in the exchange of the Michigan Telephone Company at Saginaw, Michigan, and continued as night operator for a period of 3 to 4 months. At the end of that time I became what is known in these days as an inspector, really a repair

man and was evening chief operator working about fourteen hours a day. I continued in that position until 1887 when I went to Bay City, Michigan, as assistant manager. Saginaw had a population then of probably 30,000 people, and we had about 400 subscribers which in the state of the art at that time was a fairly good development.

As Assistant Manager at Bay City I had charge of the operating of the exchange, the accounting, the collecting of accounts, the relations with the general public, making of contracts for new service and connections, and installation and connection of sub-

scriber's stations and construction of the plant except on very large jobs, the employment and discharge of all employees, in fact I had the general run of the entire business of the company at Bay City and West Bay City. They were both then operated as one exchange although there were two central offices. That exchange had about 400 subscribers; the population was probably about 30,000 people, perhaps more. I was there until July '89, a matter of about two years. I was there until July '89, a matter of about two years. I was transferred from Bay City to Flint, Michigan, as manager and as manager at Flint I had practically the same duties that I had as assistant manager at Bay City, and in addition to that I had charge of all the property and business of the company within a radius of approximately 20 miles of Flint, including Lapeer, Holly, Flyle and Duran. Mr. Howard will recognize the territory. I was in Flint until January '91. Flint at that time was a city of nine to ten thou-The exchange, however, was only about 150 odd subsand people. scriber exchange.

I was transferred in January '91 to Jackson, Michigan, to an exchange of approximately 400 subscribers. I was manager of the exchange of Jackson, and while there I had charge of the long distance lines and the exchanges in the surrounding country of probably the same distance, say a square area of approximately 20 miles. I had charge of about the same matters at Jackson that I had at Flint

and Bay City. I had charge of the construction work and all of the business end in connection with the operation of the telephone exchange, except that in large construction jobs, where we rebuilt a very large part of the plant, we usually did it with a foreman from the Construction Department, from the General Department headquarters at Detroit; that foreman in a majority of cases reported to me, and consulted with me as to the details of the job, and the work was done in accordance with my wishes, under my directions.

I occupied that position until June '94, and was transferred to Bay City, Michigan again as manager. Bay City at that time had grown to an exchange of propably 600 stations. I was there only 16 days and I was transferred to Saginaw as Manager, an exchange then of about a thousand stations with a new building just built in which had been installed a new Brand Terminal Switchboard, which was the heighth of the art in those days, being the board that was exhibited in the World's Fair in 1893 at Chicago. As manager I

had charge of the operation, the maintenance and construction, except where very large jobs were done, as I have outlined in the case of Jackson, and had charge of the relations with the public, dealings with the city officials, in fact, the general operation and maintenance of the plant. I remained there as manager, and as manager had charge of the business in the surrounding territory, possibly for 20 miles in all directions with the exception of Bay City until 1899. In January of that year I was made General Superintendent of the

Eastern Division, and had charge of the northeastern section of Michigan, and all the business therein. That included everything from the Straits of Mackinaw, on the Canadian border down to and including the town of Clio, on the Pere Marquette Railroad about 20 miles south of Saginaw, and over to the shore of Lake Huron on the east, and about the center line of the state on the west; it included the towns of Bay City, Delfina, Cheboygan, Alma, St. Louis, Saginaw and many other towns that I might name. I remained there until December 1st, 1899, when I was transferred to Detroit prior to coming to Texas. I came to Texas shortly after the first of January 1900 to take up the operation of the toll lines or long distance for the Southwestern Company in Texas and Arkansas.

I was made Superintendent of Long Distance of the Southwestern Company in Texas and Arkansas, and as Superintendent of long distance service I made studies of the manner in which the business was being handled over the long distance lines, and later got up an operating organization, and had charge of the entire operation of that part of the plant. I also took up the engineering on toll lines, particularly with reference to the amount of business that could be handled over the lines, the circuits required and upon my recommendations changes were made in the plant from time to time. The person-el was under my charge. This continued up until 1902. In the summer of 1902 I was placed in charge of all of the traffic

of the company in the States of Texas and Arkansas which was all the territory operated by them, and with the title of 327 Traffic Manager. During that time I made numerous studies of the amount—on the operating methods having in mind particularly the improvement of the service, the economies and the welfare of the employees. I continued in that position until 1904 at which time I was made General Superintendent for the company. As General Superintendent I had charge of the operation and maintenance of the plant in every particular, that is to say, that all employees engaged in either operating or maintaining these plants, or dealing with the public were under my charge and all new work, that is all questions of additional plants originated with my department; the general methods of handling the business, were all under my jurisdiction, in fact, everything except the actual construction of the plant in a larger way was in my hands.

I occupied that position until October 1st, 1909 when I became General Superintendem of the plant. As General Superintendent of the plant I had charge of the engineering and building of all plants of the company in the States of Texas and Arkansas. Also the maintenance of the property, that included the purchase of lands, the building of buildings, in fact, all plants of every character were not only engineered but actually constructed under my super-

vision and the maintenance was entirely under my super-I continued in that position until the spring of 1912 when I was made General Manager of the Southwestern Tele-

phone and Telegraph Company.

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I continud in that position in charge of the property of the company, having general supervision over all departments except the executive, until June 1917, when I was made Vice President. ing the time that I was General Superintendent of plant I spent for gross additions to the property something more than seven millions of dollars; during the period that I was General Manager I spent for gross additions to property more than fifteen and a half millions of dollars.

Q. Now, that construction work was done under superintendents

you had working under you, who did that?

A. Yes, sir; and that work was scattered all over the two States. As General Superintendent of plant-

Q. (Interrupting.) Mr. Gates, did you have occasion to make estimates and check estimates as to the cost of new construction and additions to the plant from time to time?

A. The detailed estimates were made and I passed upon every estimate that was made and approved or disapproved it. In order to do that I had to of necessity, to know something about costs and to be able to check the estimates. Every estimate covering the expenditure of more than a thousand dollars made during the period between October 1st, 1909 and June 1917 has my signature on it if it were approved.

Q. Now, during the time that you were General Superintendent and General Manager of the company, did you take an active part with reference to the construction of this new

plant as to the work was being done?

A. Yes, sir; I personally went out on many jobs. Houston, during the time that I was General Superintendent of the plant, the company spent over \$3,800,000 in the city of Houston in gross additions to the plant. Now, of that amount more than In the case of \$386,000.00 was spent on buildings and real estate; during that time we built the Preston Building located just across the street. I had the work done, I made it a point to be on the job, and go over that building every two weeks, if possible, and, I think, probably that I averaged a visit at least once every two weeks during the time that building was going up. Sometimes, perhaps, I was here every week, but in any event, either I was here or our engineer was here under my instructions, at least every two weeks during its construction so that very careful supervision was given to the erection of that building. The same thing could be said with the Hadley Building which was done under my supervision. A considerable portion of the plant constituting the Houston Exchange was constructed while I was in charge of the telephone business in this State for the Southwestern Telegraph and Telephone Company. I am very familiar

with the plant here, and during the time I have occupied the positions which I have enumerated with the company I have had occasion

to deal with inventories, or appraisals of telephone property.

330 During the time that I was General Superintendent of plant
we purchased more than two millions of dollars worth of
property, some of it I purchased directly, some of it I inventoried
directly; most of it, however, I had inventoried, but I checked those
inventories and passed on the values, and in some cases went out
and went over the property to see whether or not the inventories

On redirect examination.

and appraisements made were reasonable.

Questions by Mr. D. A. Frank:

Q. Do you know who furnishes the induction coils, transmitters and receivers, Mr. Gates?

A. The American Telephone and Telegraph Company.

Q. Do you know who makes the fundamental plants themselves, the various plants?

A. Well, the American Telephone and Telegraph Company and the Southwestern Telegraph and Telephone Company jointly.

Q. Do you know who owns the three or four thousand patents that are now standing on telephones and telephone apparatus?

A. Yes, sir, the American Telegraph and Telephone Company. Q. Do you know who makes the standards by which the plant is constructed?

A. The American Telephone and Telegraph Company. They also maintain an engineering staff that sets up standards for material, and tests materials in cases by request.

rial, and tests materials in cases by request.

Q. Well, Mr. Gates, for instance, take a little thing such as a pin on a cross arm; is it accidental that you use a certain kind of pin?

A. No, sir, it is the result of design.

Q. And how much study do you suppose has been given it? A. Well, there has been a great deal of study given to it.

Q. Well, have you had any experience with respect to the chang-

ing of the design of this pin?

A. Yes, we have, and we have had considerable experience in the use of different kinds of wood for pins, we have been guided by the engineering department of the American Telephone and Telegraph Company, have been guided in a way that has saved us a great deal of money, a great deal of cost.

Q. Well, take a plant, take the older part of this plant here in Houston—if it were designed to carry—well, give me the size, Mr. Gates, of a large conduit, about how many ducts would you have

in a very large conduit?

A. Oh, possibly sixteen or twenty.

Q. Well, now, on Main Street, about how old would you suppose—give me one that you have in mind, is there one there as old as ten years?

A. Yes, sir, there is one down in the lower part of Main street

built about 1907 or 1908.

Q. Now, at the time that that was designed, if it had sixteen ducts and each duct carried about one cable of two or three hundred pairs of wires, if it had not been for the advances made by the Amer-

ican Telephone and Telegraph Company in the art, that would

332 have happened now to those same ducts?

A. Would have had to tear up the street, and the chances are we wouldn't have enough room in the street to put in conduits, and necessarily would have had to put in fifty pair cables.

Q. And now you are using cables of how many wires?

A. Well, I think the largest in Houston is a nine hundred pair. That is the same conduit that was originally designed to carry a fifty pair cable.

Q. In other words, Mr. Gates, the capacity of that particular con-

duit has been multiplied by eighteen?

A. Yes, sir. Q. Through the work done by the American Telephone and Telegraph Company?

A. Yes sir, that is true.

Q. And with respect to other items of the plant, is the work that has been done by the American Telephone and Telegraph Company for the Southwestern Company equally valuable?

A. Yes, sir; as a matter of fact, it is more so.

Q. Even on the matters of the method of handling telephone

calls, have they assisted you in that way?

A. Yes, sir, they have done a great deal towards increasing the ability to handle calls; in fact, if it were not for the increased efficiency, the price, the cost of doing business, would have been very much higher than it is.

Q. Now, with respect to the accounting methods, do you know anything about whether the Southwestern company has originated

the accounting method that they are using?

333 A. All the accounting methods that are being used by the Southwestern Company were originated by the American Telephone and Telegraph Company and have been the result of a great deal of study.

Q. Well, what is the advantage, Mr. Gates, of having-what is the advantage that the American Company has over the Southwestern Company in respect to doing all this work, this engineering and ac-

counting work?

A. It has the entire telephone field in the United States to draw from for its experience, and it maintains and is able to maintain by reason of its size a large organization to study this stuff at all times and is able to give the operating companies the advantage of this knowledge and to coordinate the knowledge that its organization acquires from the various companies and distributed in such a manner that it is applicable to the local operating company.

Q. Suppose, Mr. Gates, you did not have this arrangement with the American Company, and some other company—say in Georgiagot hold of a new patent, would it be in a position to compel the Southwestern Company if it used that patent, to pay a royalty?

 A. Yes, sir.
 Q. Would that be true of all these patents that are controlled now by the American Company?

A. I think it would.

Q. If it would, is the instrument service worth anything to the Southwestern Company?

A. Yes, sir. Q. Just what is it worth? 334

A. It saves them buying and maintaining instruments. Q. And how many instruments can the Southwestern company

get from the American company for Houston?

A. How many?
Q. Yes, sir, can it get all it wants?
A. Yes, sir, it can get all it wants.

Q. Are the instruments that are being used in Houston of the very best type that is on the market?

A. There is not anything better that I know of.

Q. Is that one of the advantages of having the instruments fur-

nished by the American company?

A. That is one of them; and another advantage is that the instruments are uniform throughout the country and they work together in a way that different makes would not.

Q. Is that worth anything to the people of Houston, having them

uniform throughout the country?

A. I think it is worth a great deal.

Q. Are the people of Houston interested in the kind of instruments used in Dallas or New York?

A. Judging from the way they use the long distance service I would

Q. Well, all the improvements that are being used in the art are immediately available to the people of Houston, are they?

A. Yes, sir.

Q. And through this arrangement with the American company?

A. Yes, sir.

Q. In addition to the general work that is being done, Mr. 335 Gates, by the American company, for the Southwestern company in Houston, are there any special services ever performed?

A. Yes, very frequently.

Q. Just give us an example of some special service? Is the funda-

mental plant a part of it?

A. The fundamental plant is part of it; and if there is any special building, like the Preston building, for example, if we desire any information, any advice as to the best type of building to build, we can secure that information, if we desire any information regarding the best plan-the best method of building a conduit, we can get it. If there is some special condition comes up here whereby there is interference from high tension circuits, and we want special advice, we can secure it.

Q. Do you ever have the question of electrolysis up?

A. Yes, sir, and we secure very good advice and it saves a great deal of money on it.

Q. From whom do you get this service?

A. From the Chief Engineer of the American Telephone and Tel-

egraph Company.

Q. Well, suppose that you-I will change the question a little bit-I notice that in the set up of vehicles here you have nothing except Do you suppose that you consulted the American Telephone and Telegraph company as to what kind of machines you would use and whether or not you would use them at all, did you get their experience before you adopted it?

A. We got their experience, yes, and we acted upon the advice in the purchases of some of the types of cars. We got the experience of other companies throughout the country through the American Telephone and Telegraph Company.

Q. Well, in truth, Mr. Gates, is their engineering department avail-

able for any service of this character that you desire?

A. It is available for any service that we want, and it is the greatest clearing house for information regarding telephone service there is in the world today, there is not any other place that we could go and get the information, no matter what we paid for it, or what we were ready to pay for it; furthermore, there is no other place we could get it for the price that we get it from the American Telephone and Telegraph Company.

Q. Well, you have an engineering organization yourself, haven't

you?

A. Yes, sir.

Q. In this engineering organization you have capable of doing the work that is being done by the American Telephone and Tele-

graph Company?

A. No, because it has not the experience, it has not the time, the expense—we cannot spend the money to accumulate the necessary information, we cannot maintain the organization that would be necessary to get the things that we can get from the American Telephone and Telegraph Company.

Q. Have you ever seen the actual working of the instrumental

laboratories of the American company in New York?

A. Yes, sir. Q. Just roughly to-337

A. Not recently.

Q. How big a building is it?

A. Why, I don't know, Mr. Frank, I haven't seen it in several years.

Q. Well, there are a great many engineers devoting their entire

A. Devoting their entire time to research work, yes, sir.

Q. Do you know some of the things that they have developed that

the Southwestern company is using right here in Houston?

A. Yes; in fact, practically the entire plant that is being used here, in the central office apparata, has been developed and designed by them.

Q. What is hard drawn copper wire?

A. Hard drawn copper wire is copper wire that is drawn cold so as to get the strength in the skin of the wire.

Q. That means that it is drawn in such a way that the outside of

the wire is harder than the inside?

A. Yes, and it is tempered and becomes much stronger than wire

that is soft drawn.

Q. Prior to the time of the use of the hard drawn wire, Mr. Gates, what was the endeavor of the telephone companies to get wire that

could be used, and what success did they have?

A. Well, they had no success in trying to use copper wire, because copper wire at that time was soft, would stretch and sag and finally break, it is impossible to use iron wire for any-for any considerable distance because of the magnetic qualities of

the iron, through interlocking it made telephone conversa-338 tion over any considerable distance impossible.

Q. Weil, how far can you talk over iron wire?

A. Why, for commercial purposes it is used a distance of from 60 to 80 miles.

Q. How far can you talk over copper wire?

A. I don't think we have ever found the limit since we have had a repeater.

Q. If you did not have copper wire, could you talk from here to

Dallas over iron wire?

A. It would be very doubtful if you could. It couldn't be utilized

in commercial service.

Q. And that is one service that has been performed by the American Telephone and Telegraph Company for this company?

A. Yes, sir. Q. Well, you say practically everything about the plant has the same history, do you?

A. Yes, sir.

Q. Now, on the matter of finances,—you say you could not finance yourself without the American Telephone and Telegraph Company? A. I don't think we could get any money in Texas to build a

plant.

Q. I will ask you merely to state some of the financial services performed for the Southwestern company?

A. The Southwestern company requires a very considerable sum of money from time to time to extend its plant, and the financing would be practically impossible if it had to look to local forces

for the money. Money in Texas is expensive, interest rates are high—to my personal knowledge and to my sorrow I know 339 I know that on well secured real estate in the City of Dallas I am paying as much as eight per cent on some—eight per cent on some loans. I mean personally. And I know that in talking with bankers as to the possibility of borrowing money to use in different businesses in which I have been interested and am interested, outside of the telephone business, the security has to be good, and the rate is anywhere from seven per cent up. The Southwestern company, to begin

with, has to borrow in large sums, sums larger than the average

banker in this locality loans; if he did he would make the loanat least one banker in Houston told me that he would require a rate of interest that would be almost prohibitive-in fact, beyond what we could pay.

Q. On what, Mr. Gates?

A. On a note, to borrow money to put into your business, on the sale of stock.

Q. Well, would it be feasible——
A. On the sale of stock in this community in a public utility like a telephone plant I am told by bankers that eight, ten or even twelve per cent, could not be much of an incentive.

Q. That is, in a community like Houston it would be impossible

to float stock to do a telephone business?

A. Yes, sir. Now, we are able through our connection with the American Telephone and Telegraph Company to secure money on a six per cent basis for our extensions-in fact. 340 we have not been able to pay more than a five per cent dividend on our stock for several years past.

Q. Do you know what the money cost that the American Tele-

phone and Telegraph Company let you have?

A. I am not familiar, except in a general way with the later loans of the American Telephone and Telegraph Company, but it is my understanding that the last fifty million dollars borrowed by the American company cost them between eight and nine per cent.

Q. And they let the Southwestern have it for six?

Q. That was a part of the service performed under the license contract?

A. Yes, sir.

Q. Would it have been possible, Mr. Gates, to have built the plant that is now serving the people of Houston by financing it piece meal in the City of Houston?

A. I don't think so, I think it would have been an impossibility. Q. Well, just how would a man go about financing a piece of property like the Houston property if it had been built up just as

it has been built up?

A. Well, he would probably—if it had been built as it has been built, he would probably have started it with a capitalization of possibly half a million dollars; he might have sold stock locally through the bankers, would probaby have had to sell it at a discount and paid somebody to sell it for him.

Q. Well, with \$500,000.00 stock, how many bonds could

he sell?

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A. It might be possible for him to sell bonds of an equal amount.

Q. He could not sell any more, could he?

A. Oh, he couldn't sell any more and he couldn't sell those at par, if the history of the other companies in this line of business in this state is any criterion; by the time he had the million dollars securities outstanding he would soon find himself in need of additional capital, and he would then be confronted with the question of refinancing.

Q. Couldn't he go out and sell more stock?

A. I think he would probably have to refinance the whole transac-

Q. There wouldn't be anything to prevent his selling stock if he

could find anybody to buy it?

A. Oh, if he could find somebody to buy it there would be no reason why he couldn't sell some more stock, but I think it would be very doubtful if anybody wanted to buy additional stock with the existing mortgage. - I think he would probably have to take up and refinance the whole transaction.

Q. Assuming, Mr. Gates, that he could find somebody to buy another half million dollars' worth of stock, so that he would have a million dollars' worth of stock and only a half million dollars of bonds outstanding, he could then sell a half millions dollars

more bonds, couldn't he?

342 A. If he could get—if he put his money into his property and got property that would be worth it, there would be a second lien, and he probably couldn't sell them at par on a basis with the original bonds, so what he would have to do in order to have first mortgage bonds absolutely, he would have to take up his first mortgage bonds and issue-

Q. Reissue? A. Reissue.

Q. Would there be any expense connected with refinancing it?
A. There undoubtedly would be.

Q. How do bond discounts run?

A. The one local company that I know of, that I happen to know of, to get through their first isue of \$500,000.00 the bonds sold at eighty.

Q. That was a first mortgage loan? A. First mortgage.

Q. What per cent did the bonds bear?

A. I think six per cent. Then a commission. I understand, was paid for the sale of the bonds.

Q. Why would there be a commission paid, Mr. Gates, if the

bonds were sold at a twenty per cent discount?

A. The man who bought the bonds thought they were worth only eighty cents on the dollar, and it was necessary to employ some financier to make him think that they were worth that much.

Q. What commission would a financier get for handling the

bonds of an isolated company?

A. I should judge that he would get anywhere from ten 343 to twenty-five per cent, depending on the circumstances.

Q. That would make the bonds net to the company not more than seventy dollars on the hundred dollars?

A. Yes, sir.

Q. Well, on the basis of selling bonds at seventy, what could he expent to get for his stock,-assuming that the stock would pay eight per cent?

A. I don't think he could sell it at par.

Q. He would have to take something less?

A. I think so; I do not think any eight per cent public untility stock in Texas would sell at par.

Q. Do the manufacturers and the industrial plants around Hous-

ton make more than eight per cent?

A. Yes, sir, according to the United States Census Bureau's re-

Q. What do they make, Mr. Gates?

A. In the year 1914, which is the last published report, they made 15.36 per cent.

Q. Is that the average for a great many of them?

A. That is the average for all industries in the City of Houston having an invested capital of more than \$25,000,000.00.

Q. Have you a list of those, Mr. Gates?

- A. Yes, sir. Q. Do you mean an invested capital of \$25,000,000.00 covers all of them?
- A. All the industries engaged in manufacture in the City of Houston.
- Q. Now, Mr. Gates, you say that the industries in Houston, 344 according to the Census Bureau of Manufacturers, in 1914, were making 15.36 per cent?

A. That is what the report would indicate.

Q. Would it be your judgment they are making more than that or less than that?

A. I should expect to find them making more than that,

Q. This was before the day of the so called profiteering, wasn't it? A. Yes, sir.

Q. Now, in financing a telephone plant, is it likely that any telephone plant located in Houston would ever make 15 per cent?

Q. In order to get money for a telephone plant, what would be the fact as to whether you would have to compete with those local industries in getting it?

A. I think we would have to compete with them-you would have to compete not alone with the manufacturing industries, but with

every line of business in which money is employed.

Q. Does this suggest anything with reference to the history of a great many local companies who have failed in the telephone business—this difficulty of financing?

A. I think it has been the rock upon which most of them have been wrecked, the business has grown faster than their ability to

finance.

Q. If the Southwestern company had been a local concern, without the arrangement that it has with the American 345 company, would there be any reason why it would not have to pay discounts that you have enumerated?

A. None that I know of, excepting that it might-it might so conduct its business, the management might be farseeing enough, look ahead of the game far enough, and not be caught quite as quickly as some of the companies.

Q. But over a period of 25 to 30 years, if they finance a long time in advance, what would happen with respect to the balances they would have to carry in the bank?

A. They would have to pay the price if they financed in advance.

it would increase the cost.

Q. That in itself would increase the cost of financing?

A. Yes, sir. Q. Then in your judgment state whether or not the arrangement with the American company as far as financing is concerned is of

great advantage to the Southwestern company?

A. I think it is of great advantage to the Southwestern company in fact, I doubt seriously if it would be possible for the Southwestern company to even approach its present size and its present ability to serve the public, without that service.

On recross-examination.

Questions by Mr. Howard:

Q. Mr. Gates, in detailing the multitude of benefactions that have been visited upon the Southwestern company by the American Tel.

and Tel. Company, you put first and foremost the matter of 346 these instruments you say they furnish you. What instruments are they you speak of?

A. The transmitter and receiver. I didn't put it first and fore-

most, Mr. Howard.

Q. I have it first on my list, so I thought— The instruments is a very small part of the total cost of the plant, but a very important one.

Q. Well, regardless of what it does, let's find out the value and

cost of these-what do you call them?

A. Transmitters.

Q. Transmitters? That is a little coil of wire in the receivers, some sort of metal mechanism?

A. Induction coil, transmitter and receiver are three articles furnished.

Q. Well, taking those combined, what would be the combined

value of those for the telephone?

A. I should judge—I haven't any present day prices, but I should judge that the present day cost would be something between four and five dollars.

Q. You have put most of them in there at a price of about a

dollar, haven't you?

A. They are not in the inventory at any price, Mr. Howard.

Q. But then that is about what they could cost in the old days when those things were being purchased?

A. We do not buy them. Q. You do not buy them?

A. No, sir.

Q. Well, assuming they would be worth a dollar, and you have, say, thirty thousand here-

A. I am not assuming they are worth a dollar. Mr. 347 Howard; they are worth four or five dollars at the present

market, to the best of my knowledge.

- Q. Would you say that within the time that this plant was being constructed-that is, the principal part of it-from the beginning, in 1914, 1915, that those things could not be purchased for around a dollar a set?
 - A. I would.
 - Q. You wouldn't say that-
 - Mr. D. A. Frank: They never were purchased for them.
- Q. Well, assuming they were worth four dollars a piece, and there are around twenty-five thousand-and that is \$100,000.00 for the American Tel. and Tel. Company?

A. There is no value whatever placed on those.

Q. I understand you do not get down to values, you go in for generalities. But I am trying to get you down to the earth and what we can figure we are getting for this \$40,000.00. If you assume the investment to be \$100,000.00, six per cent on that would be six thousand dollars, wouldn't it, Mr. Gates?

- A. What is the six per cent for, Mr. Howard? Q. I don't know whether Mr. Frank's laughs are signals or not, but if they are please disregard them and let's proceed.
- Mr. D. A. Frank: No, sir, I am just laughing at your evident unfamiliarity with the fundamental principles of a plant. Mr. Howard: Oh, yes, I understand-how you regard them.
- Q. We are wanting to get down to a basis of analysis. 348 Well, they are worth something, that would be a kind of way of getting at what the investment is-if the American Tel. and Tel. Company have got an investment in here, if you haven't an inventory, why, we could figure the legitimate return upon the investment, couldn't we?

A. Well, now, Mr. Howard, let me ask you what in your opinion would be the number of transmitters and receivers that would be necessary in this exchange of twenty-six or twenty-seven thousand?

- Q. I don't know; I am asking you how many sets would be necessary?
 - A. Set? There is more than one set for a station.

Q. There is more than one set for a station? A. More than one set for a station.

Q. You mean subscriber's stations? A. Yes.

Q. Well, why, and how many, that is what I want to get at?

A. You have got to carry a stock in order to take care of your increase in subscribers, to take care of your losses, and-

Q. How many increases in subscribers do you have in a year on the average? About a thousand, isn't it, in round numbers—been running around thirty thousand somewhere, that is a fair approximation?

A. No. I will tell you in just a moment what we have, in the

year 1919—there were more than five thousand new telephones put in in Houston during the year 1919.

Q. How many have you got in all now,-27,000 isn't it?

A. We had 27,000, in round figures, in October.

Q. Well, I said thirty thousand, that allowed a latitude of three thousand?

A. To gain one telephone requires the installation of more than one telephone, it requires the installation of more than two telephones.

Q. Well, let us have about how many in your judgment you have

been using here and keep on hand here?

A. Let me hear your question, Mr. Howard.
Q. About how many of those things a year——

A. How many of what things?

Q. Why, these things we have been talking about, you know what they are, don't you? If you don't, I can't explain it to you; we are talking about induction coils, transmitters and things like that, things that may be understood and referred to?

A. Transmitters, receivers and induction coils.

Q. All right, call it that.

A. I should judge you would want about thirty-three thousand

of them to start one exchange of this size.

Q. Yes? Thus, the American Tel. and Tel. Company buys from a plant that it owns, namely the Western Electric Company, and then furnished them to the people of Houston, or to the exchange here?

A. There is no value placed on the transmitters and receivers in

this reproduction.

Q. Oh, I understand there is now. We are talking about this four and one-half per cent now, we are talking about the great things the American Tel. and Tel. Company does for you.

A. But what the American Tel. and Tel. do it seems to me is immaterial; what those transmitters and receivers would cost you if you owned it and bought it and put it in this

exchange.

Q. Well, you say you take thirty-three thousand of them and give them an average of four dollars?

A. I said the value would be somewhere between four and five dollars. I should estimate it nearer five dollars.

Q. Well, that is the retail price?

A. That is the wholesale price.

Q. That is the wholesale price of the Western Electric Company?

A. I should estimate that the transmitter, receiver and induction coil would cost at least \$4.90.

Q. It is, if some independent company should buy them?

A. Isn't the situation you are in the same if you were going to buy these.

Q. No, we are talking now about the benefit to your operation expense?

A. It is true.

Q. And in your earnings that you set aside and pay over to the

American Telephone and Telegraph Company—we have gotten off this, we have just progressed a little, and we are not talking now about the reproduction of this plant; Mr. Frank has lead you from the proposition to the American Tel. and Tel. Company, which appears in disbursements in your annual returns. So, then, these, thirty thousand of them, you say are worth four and five dollars, but you do not know what the cost of manufacture is to the

company that is owned by the owner of this company?

A. No. sir.

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Q. You do not know what they could be manufactured for?

A. I think that is immaterial, Mr. Howard.

- Q. Well, you are hardly a judge of that, Mr. Gates-there are a whole lot of things that I regard as immaterial that you have got into this record; that is just your opinion about that—and treated as Have you any idea as to the cost of manufacturing immaterial. those articles?
 - A. I have not.

Q. You have not?

A. If I would expect to buy them I would expect to go in the

open market and buy them.

Q. Yes, yes, but anyway, taking them at five dollars, that is around it, take thirty thousand and apply the rate of six per cent—that would be \$150,000.00?

A. That would be \$165,000.00, Mr. Howard.

Q. Mr. Frank has a quotation of \$4.80, but we will take the \$5.00 and treat them as retail. That figures out how much?

A. They are not treated as retail, we are going to buy them in

wholesale lots, \$165,000.00.

Q. Well, I mean where you buy them, where you get them usually, \$165,000.00 at six per cent is how much money?

A. Six per cent on \$165,000.00 amounts to \$9,800.00. \$9,750.00. Q. That is taking a little additional price on them, even to the user, and it is disregarding the manufacturing cost by a company

that is owned by the owners of this company. But that leaves 352 us now out of this thing about—something over \$30,000.00? A. But Mr. Howard, let me ask you, what is this six per cent for?

Q. That is the return on the investment they have got here.

A. I don't think six per cent return is really to be considered, in fact, I don't think six per cent return is a sufficient return to start with, I think an eight per cent return is the very minimum.

Q. Well, that is not a public utility corporation, is it—this Ameri-

can Telephone and Telegraph Company?

A. A public-you are putting yourself in the position of this company buying those instruments and operating them as a public utility, they are entitled to a fair return, and I think that return should be at least eight per cent.

Q. Well, I might differ with you about that, when the question of interest rate of eight per cent is considered. But anyhow, you just allow me that two per cent, because I have allowed you that five

dollars and lets go on. That leaves \$30,000.00-

A. But I am not willing to go on, Mr. Howard, because there are other things enter into it besides the rate of return—there is a depreciation in those instruments.

Q. You told us a whole lot about inventions—just be a little more specific, will you, and tell us what have they invented in late years

that this company is using?

A. Well, this figure you started to build up-

Q. But we have finished that.

A. No, I won't admit we have finished that.

Q. You can add eight, you can add fifteen if you want to, but I am building it up at the rate of six and we have arrived at that.

A. That is your basis and not mine.
Q. Well, give me your basis then?

A. All right. I would say that eight per cent return is a fair return with a depreciation charge of ten per cent.

Mr. J. D. Frank: That will be eighteen per cent.

A. With the cost of maintenance, that will be at least four per cent.

Mr. J. D. Frank: Twenty-two.

A. Taxes will be at least one per cent. There is twenty-three per cent instead of your six per cent.

Q. Well, that is your idea of the thing?

A. That is my idea from thirty five years' experience.

Q. You have got the \$40,000.00 in one item and you won't have anything left if you don't change it.

Mr. D. A. Frank: That is true, you do get it in almost one item.

Q. So now the parent company, that is operating all these things—we will just forget about the Southwestern for a minute, let's go back to the real owners of this utility, the American Tel. & Tel. Company are operating this exchange?

A. They are not operating the exchange, don't own the exchange.

Q. They own the stock?

A. They own the stock of the Southwestern company, or a

354 certain portion of it, which is set out in it, I suppose.

Q. Mr. Gates, if you organized a little company that owns a railroad and you were the owner of nine'-nine per cent of the stock, or ninety-eight per cent of the stock, and your son-in-law was the owner of two per cent or one per cent, you would consider yourself the real owner of that property, wouldn't you?

A. You understand, I couldn't transfer that railroad or any part

of it?

Q. I understand that, but you would be the one that was getting the profit, wouldn't you?

A. I would be getting my proportion.

Q. Well, we will put it that way—that that company that owns practically all the stock of this company is also the owner in that same sense of the Western Electric Company, that manufactures

these coils, and then it takes these coils which is manufactured through its associate company and its own child, and puts them down here at such a figure as it wants to charge,—and then you are basing all those computations without regard to what the instruments actually cost the company that owns all these properties?

A. Mr. Howard, the price that I make is the price that you could obtain in open competition with other manufacturers; there are other manufacturers in the market besides the Western Electric

Company.

Q. Yes, but you never do buy from anybody but the Western

Electric Company, do you?

A. But you are talking entirely about another thing, as I understand it? You are talking about what these instru-

ments could be bought for.

Q. No, I am not, I am talking about what the value of them is and what it costs the real owners of this company to put them in here, that is what I am driving at—they are operating these plants through a certain agency, the American Tel. and Tel. Company, through an agency known as the Southwestern Telegraph & Telephone Company, is operating this exchange; and the American Tel. and Tel. Company, through another agency, known as the Western Electric Company, are making these things; then the owner of the whole business takes one of the agency's products and brings it down here and has it used by another creature of its own, that it owns, then I am trying to get at the cost of these instruments to the real owner of the property. Now, you say you don't know anything about that?

A. I think the best evidence in that case is what you could buy

those instruments for in the open market.

Q. Well, there is no open market, because you have already testified that you buy all your equipment of this kind from the Western Electric Company?

A. But as I understand you, what you are seeking to do is to set up a transmitter and receiver, whether it is the one we are using

today or some other transmitter and receiver.

- Q. Oh, no. I am not, I am trying to find out what it cost the real owners of this property to put this service in here and get a proper return?
- A. I have said to you I don't know what it cost the Western Electric Company to manufacture these instruments, Mr. Howard.
- Q. So you cannot give me any set up based on what these things cost the Western Electric Company, which is a related agency to the Southwestern, the American Tel. and Tel. Company serving the purpose of the parent of them all,—you cannot give me any data on that?

A. I don't know what they cost the Western Electric Company.

Q. All right, if you cannot do it, that is all right. Let's talk about these three thousand inventions—I won't ask you to name all the three thousand, but name five or six of them?

Mr. D. A. Frank: He can name the three thousand. Do you want to ask any questions?

Mr. Howard: Yes, I guess so.

Q. Did you name them, Mr. Gates?

A. Do you want me to name three thousand? I can take the time of the court for the rest of the day.

Q. No, I don't want them all, but name me probably five or six

of the principal ones?

A. One of the principal things that applies to the City of Houston is the installation of switchboard cable by water proofing process. Without it, common battery service in coast towns would be almost an impossibility.

Q. Yes? All right.

A. Do you want me to go on any further?

Q. No, we will speak about that a little further. That you claim to be an original idea of the American Tel. and Tel. Company?

A. It was developed by the American Telephone and Tele-

graph Company.

Q. No other company, or no other scientific men in the United States knew anything about insulating wire except the American

Telephone and Telegraph Company?

A. That particular necessity—there were other people that knew something about it, but for that particular necessity or use the American Telephone and Telegraph Company designed that cable; it was first used in Corpus Christi, and I knew all about it because I was in on it, and I had the problem confronting me of how to operate a common battery switchboard in a moist climate.

Q. Well, that is one. What do you call that-water casing?

A. No; I said a waterproof insulated switchboard cable.

Q. Now, your contention is that had it not been for the American Telephone and Telegraph Company we would have been groping in ignorance on that matter today?

A. You might not be groping in entire ignorance on that matter, but you certainly would not have had it in the time that you had it.

Q. What you mean to say is—that they have gotten up a particular kind of insulation, waterproofing, that has been adopted by the Western Electric Company and therefore of necessity finds its way into use in the Bell plant?

A. Where it is necessary to use it.

- Q. Yes. All right. Well, what other invention—that is one, only one out of five or six?
- A. Probably one of the greatest inventions ever known to mankind is the repeater. That has made it possible for your citizens to talk over distances that they never dreamed of.

Q. The repeater? A. Yes, sir.

Q. Well, we can see very near all over this city, so we are not concerned about long distances. So let us confine them to inventions more suitable to the exchange. I will ask you this, Mr. Gates,

is't it a fact that you have no inventions that are protected by patents today except such as belong to long distance traffic?

A. Yes, we have a great many patents, hundreds and thousands

of them, that belong to the telephone apparatus in general.

Q. That are recognized by the telephone world as indispensible to good, first-class telephone service?

A. Yes, sir.

Q. All right. You have got now--what, you have got those inventions, you say, that are recognized and protected by patents—they are protected by patents, are they?

A. Yes, sir. Now, I am not saying that I have that many.

Q. You are not saying what? A. That I have it.

Q. That you have what?
A. That I have eight thousand patents.

Q. Oh, I am not saying it.

A. You are talking about, by the American Telephone and Telegraph Company?

Q. Well, I just naturally treat you and the Southwestern the

same.

359 A. Well, not the Southwestern company. We are talking about the American Telephone and Telegraph Company and

the Western Electric Company.

- Q. Well, I mean when I speak of you, I mean of course, the telephone works, the Bell telephone works, thousands of inventions protected by patents that independent telephone companies would regard as indispensible to the-
- Mr. D. A. Frank: Oh, he didn't attempt to pass on how indispensible they were.

Q. Well, indispensible to first class telephone service?

A. Oh, no.

Q. That is what I want to get.

A. You might on, Mr. Howard, and furnish telephone service at a considerably reduced expense, some of them might reduce their expenses, some of them might improve their operations, there is a difference in the grade of telephone service.

Q. Well, let me get your answer: You have those inventions pro-

tected by patents required by independent companies-

Mr. D. A. Frank: He didn't say "independent companies."

A. I don't know what the independent man might consider is absolutely essention. You night get an independent man up here at Conroe, where the subscribers are satisfied if they can talk at all, and you might get an independent man up here at Conroe whose

subscribers would be satisfied with any sort of telephone serv-360 ice-if the telephone worked once a week they would be satisfied—the telephone might be noisy, the sounds might be distorted-even the shape of the receiver, the shape of the ear piece affects the sound-and lots of people would be satisfied with it; I think I can produce an independent telephone man who would say

that a telephone that you couldn't even talk over would be satisfactory. I think you have got them right down south here—I was in Sour Lake in an independent exchange two months ago, and I tried to talk over the telephone that the local man, independent man, thought perfectly satisfactory and I couldn't talk over it.

Q. Well, you will find a great many people who say that they do not think the service in this town is just what it should be.

Mr. D. A. Frank: He didn't say anything about service.

Mr. Howard: Well, about a great many things.

Q. Now, as I understand you, you recede from your answer a while ago that—

A. Well, I didn't understand your question if I answered it that way because I wouldn't attempt to say what the other man's judg-

ment might be.

Q. Well, you have told me that, said you didn't understand that. Now, as I understand it, there is no invention that is absolutely—that stands out protected by a patent, that stands out as so generally

recognized to the proper and economic operation of the tele-361 phone that it is indispensible, that is protected by any Bell

patent.

A. I do not think there is any patent today that would absolutely prohibit anybody else from getting into the telephone business in some form. In other words, the basis patent expired some years ago.

Q. I see. Well, then, it is down to this: That you have patents, or the American Telephone and Telegraph Company—let me say,

"you" because it is so much shorter?

A. All right.

Q. That you have patents that in your opinion are much more adaptable than anything else in use, but there are other competing contrivances or equipment, leaving it to a question of judgment of you and operators of the Bell System?

A. Well. I think that there are—that they don't make it possible

to furnish better telephone service, they claim, without them.

Q. Yes, you think that?

A. Yes, sir.

Q. But there is nothing like—there are even inventions protected by patents that for a man to go into the business at all in fact he would have to have that invention and if he didn't get it he might as well stay out of the business?

A. Well, there are some forms of the telephone business that could not be gone into successfully without infringing on some of

these patents-and the rest too.

Q. Yes, that applies to the long distance to some extent? A. Yes,—and applies to local service in some forms, too.

Q. Yes, I think I understand about these patents, that you have quite a large number of them, and other contrivances, nearly a thousand, and it is a question of taste?

. Yes, some fellow might be satisfied to ride a mule and another

might want an automobile.

Q. Yes, I know you undoubtedly feel very kindly towards your own contrivances. Now you spoke yesterday about copper—hard copper wire. Did they invent that?

A. It was worked out in the laboratories of the American com-

pany.

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Q. How long has hard copper wire been in use?

A. I think that the first hard drawn copper circuit of any consequence was strung between Boston and New York about 1886.

Q. Copper has been in use in the world a good deal longer than you and I have been here, hasn't it?

A. Yes, sir.

Q. Probably might go back to the ancients?

A. The ancients had a method of tempering copper.

Q. And they had a method to harden copper?

A. I think they did, I have read of it.

Q. So, there is nothing wonderful about making hard copper wire?

A. But nobody knew anything about it between the ancient history you are talking about and about thirty-five years ago.

Q. Now, that is useful especially in the matter of carrying on

very long distance conversations as I understand it?

A. Yes, but without copper it would be impossible to build and operate your local exchange.

Q. Oh, well, but you do not claim to have any patents on

copper, do you?

A. No. But I don't want to agree with you that copper is only used for long distance service.

Q. Is copper wire any more or better for local exchange than other character of wire?

A. It is better and-

Q. In what way better, and why?

A. Not only from the transmission standpoint, but it makes it possible to-vou can use a smaller conductor, and therefore get your wires in a smaller space; unless you could put these wires, say 1,800 of them, in a single duct today, as we are doing today, you couldn't string these wires through the streets

Q. All right now.

A. Just a moment, Mr. Howard. I would like to go through with it since you have asked me the question, I would like to answer it. Our conduits are limited in size, the room in the streets is limited, there are other things in the streets-for instance conduits, water pipes, gas light pipes, sewers, electric light wires, and if we had to use an iron wire, for instance, even though we could find some way to get around a lag due to the magnetic feature of it, we couldn't get that many wires in that conduit.

Q. Well, other companies have got the right to use hard rolled

copper wire, haven't they?

A. Yes, sir.

Q. Well, there is nothing particular about that?

A. But hard drawn copper wire is the result of the efforts of the engineering department of the American Telephone 364 and Telegraph Company.

Q. All right. I don't want to interrupt you, Mr. Gates, but I have some other questions to ask. Now, we have found out from the American Telephone and Telegraph Company that they get the Western Electric Company to manufacture some coils and bring them down here and put them in this plant, we have found out that they have gotten some inventions, but have competition, we have found that they are using hard wire. Now, you say there are a lot of engineering benefits that you have. Have you an engineer in this plant here, Mr. Gates?

A. Yes, sir. Q. Who is he?

- A. I don't know his name.
- Q. You do not know his name? A. Not of the Houston engineer.

Q. He is a resident engineer?

A. Yes, sir.

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Q. What are his duties, what is he capable of doing?

A. His duties are to keep up with the growth of the plant, and to

plan minor extensions of the plant.

- Q. Minor? Well, why do you put a limit on him, why don't you give him a chance to grow and let him make some of these major extensions?
- A. Mr. Howard, the man who is here, he is a good man, but he does not have the opportunity to get the experience in designing plants that a man who covers a wider range of territory gets, more jobs of this kind.

Q. Has he lived here long? A. I don't know the man.

Q. Well, wouldn't he be in about as good position to know where the growth of this telephone system was going as a fellow who came down here from a fourteen story building in New York and went and registered at the Rice Hotel and took an auto and circled around this city for a while and came back and told you where you were going to put your plant?

A. As I stated to you, Mr. Howard, he has not the opportunity

to get the experience.

Q. Well, let's pass him up. You have got a bigger man up in Dallas?

A. Yes, sir.
Q. What does he do? He is a kind of State Engineer, or district engineer, isn't he?

A. Yes, sir. Q. Well, what does he do?

- A. He supervises the work of the local engineer and designs the larger portion of the plant.
- Q. And he casts his eye over about where the growth is going to be, and the extensions are going to be, doesn't he?

A. Just what engineer are you talking about now?

Q. I am talking about the Dallas engineer. What title do you give him?

A. Well, we have a state engineer.

Q. Well, State Engineer, he is quite a big man?

A. The State Engineer, he has charge of the physical prop-

erty.

Q. He doesn't know anything about the growth of the 366 cities, and cannot go into a city and know anything about where the telephone growth is going to or where you had batter put your extensions and things of that kind?

A. He knows something about it, but we have a commercial en-

gineer who specializes on that.

Q. All right. Now, we have two-we have got the little fellow here, and the big fellow in Dallas, and they both look over it. have you got any other engineer at Dallas, got any over-engineers up at Dallas?

A. Yes, sir, we have an engineer at St. Louis. Q. What is his title?

A. He is chief engineer.

We have struck the source then. Now Q. He is chief engineer. what does he do?

A. He passes upon the plans.

Q. Does he ever circulate around?

A. He supervises the work in a general way.

Q. Now, he supervises the work? He pays some attention to the growth of the city and whether you have got your plant located right and where you are going to locate the additions to it, he gives some consideration to that, does he?

A. Yes, sir.

Q. Now, we have got that thing looked over by three different men, all the way up; and now, to make it absolutely sure we are going to get some A. T. T. engineers to come down here from New York and tell us that it is par excellent,—is that the way this engi-

neer part is worked?

A. We might in some instances ask the A. T. T. for some 367 information. In the case of this building we have here the building plans were passed upon by the American Telephone and Telegraph Company and some minor changes were made at their suggestion; I personally took those plans to the Chief Engineer of the American Telephone and Telegraph Company and asked him for his opinion, because while I had built several buildings, I didn't feel that I had the same experience and the same broad knowledge that an engineering organization of that kind would have.

Q. Well, you didn't have, but you have this Chief Engineer up at St. Louis,-that is a pretty good sized city, and that is a pretty considerable man when he gets to be Chief Engineer of this entire South-

western system, isn't he?

A. That is very true.

Q. Why didn't you take the plans to him and get his advice?

A. We did take his advice on some things.

Q. But you are not satisfied?

A. But when I want to spend other people's money to that extent, I want to get all the advice I can. Q. You spent other people's money without getting the advice?

A. I got the advice before I spent it. I think it is a very common thing for people to go outside and get engineers.

Q. Why not have another, why not get one in Europe to overlook

this fellow in New York?

A. If there was a better engineer, and I had a lot of money to spend. I would hunt him up.

Q. And you might issue bonds to get the money, too, might

you not, Mr. Gates?

A. I might.

Q. As the exchange rates are raised, why you can keep going?

A. What is your question?

Q. Who is the chief engineer in this fourteen story building up here in New York?

A. I don't know anything about any fourteen story building.

Q. Who is the great controlling genius up there?

A. You mean the Chief Engineer?

Q. Well, I don't know. I mean the man that has got all this knowledge,-he may not be the Chief Engineer.

A. Well, it is not confined to one man, Mr. Howard.

Q. Well, then they employ men all over the country—if one should happen to resign, they would send down to Dallas or Houston and get one, is that the idea?

A. Well, a few years ago I had occasion to get into a chemical analysis of some creosote oil that we were using to treat poles-

Q. Did you take it down to this man on Main street? got one up in Dallas, haven't you?

A. I had a chemist in my employ at that time, but the analysis was such that I felt that I wanted further information.

Q. And you did not stop until you got to New York?

A. I sent a sample to New York, and I found that at that time there was a man connected with the University of Texas who was employed on the staff of the Chief Engineer of the American Telephone and Telegraph Company-

Q. Well, all right, there now, we have gotten along—the coils, patents that are not protected and some other things,

and those engineers,—and finally they got our money for Now, let's see, let's take a sort of view of this situation, Mr. Gates: You have got a big concern up here called the American Telephone and Telegraph Company, it is operating a plant down in Houston Texas, and in other places-

A. Not operating a plant in Houston, Mr. Howard.

Q. Well, it is the owner, anyway. A. No, it is not the owner.

Q. It owns the company that is operating the plant?

A. It is the owner of the stock, a portion of the stock, as set out in this testimony.

Q. Well, all right, we will say the owner of the stock-it is the owner of all the stock, practically all the stock, which is practically the same thing as being the owner?

A. No, it is not practically the same thing.

Q. Practically the owner of the operating company that wants to

make some money operating the telephones, and being the owner of all the stock, all the profit that comes from this operation goes back through the conduit called the Southwestern Telegraph and Telephone Company, to the source, the American Tel. and Tel. Company, they have got that interest to look after and subserve and keep up. Then up here in Indiana or Illinois—they have got another concern, another conduit known as the Western Electric Company, that is manufacturing a lot of equipment where, under an arrange-

ment, it gets all the profit upon the equipment bought by this operating company. Now, it has got these two sources of earnings, and income to promote. Now, that particular company that was in the manner I have detailed, the owner, or owns, the stock of these two concerns, finds that it is necessary to get some money to keep this operating company going, and then by taking its own money and putting it down here, lending it to itself at six per cent, you think that it is doing a great service to the people of this city not to charge them bonuses and commissions, or prevent them being charged bonuses and commissions, and thus keep the interest rate from being run up to nine per cent?

Mr. D. A. Frank: Mr. Howard, you have made a long speech now. Now, what is it you want from this witness?

Mr. Howard: Were you confused by it?

Mr. D. A. Frank: Yes, sir.

Mr. Howard: Well, the witness has not expressed any such confusion, it had not occur-ed to him up to that moment, it may have occur-ed to him now.

A. Mr. Howard, I was just about to say that I thought you were making a statement.

Q. Oh, yes, your mind was just a fraction behind Mr. Frank's?

A. No, I am a slower talker.

Q. Well, what have you in mind as to what I said?

A. I have listened to you make a certain statement that I do not know to be a certain fact.

O. Well, does this statement penetrate in your mind?

371 Q. Well, does this statement penetrate in your mind?
A. The statement penetrates in my mind as I understand it, I don't know that I understand it.

Mr. Howard: Well, Mr. Stenographer, read that long question back.

(The reporter referred to his notes and read the question back as above appears.)

Q. Do you think under those conditions that it is doing this utility here a great service and that that is a thing that should be paid for?

A. But those conditions are not the facts, as I know them.

Q. Well, which ones are not facts? Let's get down to them.

A. All the stock you say is owned by the American Telephone and Telegraph Company—all of the stock of the Southwestern Company. That is not my understanding.

Q. Well, what is your understanding?

A. My understanding is that there is some stock not owned by them.

Q. How much?

A. I don't know off-hand.

Q. Just one per cent?

Mr. Powell: The exhibit shown here is 99 1/40 per cent, I think it is.

A. The exhibit shows. All the profit does not go to the American Telephone and Telegraph Company, because they do not own all the stock.

Q. Don't own all the stock?

A. The Western Electric—they don't own all the stock, you made the statement they owned all the stock.

Q. I hardly thought so,—we will modify that.

A. That is what the stenographer read, and you have got it they

own the stock of all these interests.

Q. Well, they own or control a majority of the stock-the West-

ern Electric Company?

A. Now, let me ask you a question, Mr. Howard: Aren't you asking me this: Don't you think that there is some benefit to the people of Houston by reason of the fact that the Southwestern company can borrow money from the American company at the rate of six per cent rather than pay nine per cent?

Q. I didn't ask you that.

A. That is my understanding of your question.

- Q. Well, if you don't understand it then we will let it go, it has been read back to you twice.
- Mr. D. A. Frank: That just illustrates, Your Honor, the unfairness of Mr. Howard's question. I think Mr. Howard has the right to make statements, and we do not object to his making statements, and we do not have to agree with them. These long and involved questions that Mr. Howard is constantly injecting into the record I consider to be unfair, because———

Mr. Howard (interrupting): Well, we can answer the question

if he wants to, it is up to him.

A. I have answered the question as I understand it, Mr. Howard. Q. Mr. Gates, isn't it a fact that the independent companies all

over the United States treat this American Telephone and
Telegraph Company's service of four and a half per cent as
a joke?

A. No, sir.

Q. And they all treat it and all talk about it as a rider that is im-

posed upon the Bell properties?

A. I heard the witnesses testify—I heard a witness testify in one case in this state in which he made the statement that as Assistant General Manager of that company, that he considered his contract with the American Telephone and Telegraph Company one of his most valuable, if not his most valuable, assets.

Mr. D. A. Frank: That was a company not controlled by the-

A. That was a company not controlled by the American Telephone and Telegraph Company.

Q. Is it absorbed vet?

A. No. sir.

Q. Has not been absorbed?

A. Not to my knowledge. It had not been a few weeks ago. Q. That is all. Do you know whether it is under process of absorption?

A. No, sir.

Q. You do not know then?

A. I do not know that it is, or that it is not I believe it is not.

I think it is an independent outfit and remains so.

- Q. Now, just come back and bear some upon these coils. Isn't it is fact that up to the year 1917 that the Western Electric Company would go out into competition with other manufactur-374 ers to sell to independent companies and would sell at a
 - price under what they would sell to the Bell companies? A. I don't know it to be a fact, and I don't believe it is a fact.

Q. You do not know it to be a fact, never heard of it being a fact?

A. No, sir. But on the contrary I have heard independent people tell me that they could not buy as cheaply as we buy.

Q. That if they did not start out in a campaign of that kind, to destroy all competition by underselling even the price the Bell companies paid them?

A. The Western didn't start out to undersell all competition at a lower price than was paid by the Bell Company-is that the ques-

tion?

Q. Yes, if they did not start out to destroy the competing companies, manufacturers by underselling them, and selling to the independent companies at a lower price than they were selling at the time to the Bell companies?

A. I don't know that they did; in fact, I am quite sure they did

not.

375 FREDERICK LELAND RHODES, a witness for Complainants, being duly sworn, testified as follows:

Direct examination.

Questions by Mr. J. D. Frank:

Q. What is your name?

A. Frederick Leland Rhodes.

Q. Where do you live, Mr. Rhodes?

A. In Short Hills, New Jersey, about 20 miles from New York City. My office is in New York City.

Q. What is your occupation? A. Telephone Engineer.

Q. For what company?

A. The American Telephone & Telegraph Company.

Q. How long have you been connected with the American Telephone & Telegraph Company?

A. 28 years this coming June.

Q. I wish you would state, Mr. Rhodes, just what our experience

and training have been from an engineering standpoint?

A. I was graduated at the Massachusetts Institute of Technology, in 1892, receiving the degree of Bachelor of Science and Electrical Engineering. I immediately entered the employ of the American Bell Telephone Co. and have since been continuously in the employ of that company and its successor, the American Telephone &

376 Telegraph Co. My early work was assisting more experienced men and I had to inspect and become familiar with telephone appliances and construction in many parts of the United States. My work covered various parts of the telephone plant, such as underground conduits and man-holes, underground aerial cable, pole lines and other appurtenances and wires, and to a considerably less extent, however, buildings, central office equipment and sub-station equipment. In 1905, I was placed in charge of the section of the engineering department of the general engineering staff having to do with the development and standardizing of telephone engineering materials, apparatus and practices, covering the outside plant of the Bell System. In 1909, I was appointed outside plant engineer, continuing to be responsible for the development and standardization of all materials and methods recommended for use in the outside plant of the Bell System. That work covered the preparation of literally hundreds of specifications, setting forth in full detail the requirements to insure the best results. It has covered a vast amount of study, research, laboratory experiments, field trials and tests, both of a physical and chemical nature. It has in brief covered the development and standardization of plant construction and to some extent maintenance standards. It has included important improvements in the design and efficiency of cables, work on the economical basis of planning and designing telephone outside plant, the relations between the telephone plant and high tension transmission wires, and it has involved a constant examination of new ideas, wherever

they may originate, pertaining to my end of the work. In 1919, for the purposes of more efficient administration, there was a separation of the development and engineering functions, two departments were created where there had formerly been one. One of these is known as the Department of Development & Research, and the other as the Engineering Department. I am now associated with the Department of Development and Research and have the title of Outside Plant Development Engineer.

Q. Well now, on your work of standardizing materials, you spoke of that work being carried on for telephone materials, that is for the

United States as a whole is it, the Bell System as a whole?

A. For the benefit of the entire Bell System.

Q. Not only for the American Company but for all your associated companies?

A. Principally for the associated companies.

Q. Now, are you connected with any engineering societies or committees at the present time or have you been connected with them in the past?

A. Yes. Q. Will you state what they are?

A. I am a Fellow of the American Institute of Electrical Engineers. The Institute has three grades of membership, associates, members and fellows. For four years I have served on the Board of

Examiners of the Institute and I have been Chairman of that board for two years. In 1916 I was Chairman of the Telegraphy and Telephony Committee of the American In-

Telegraphy and Telephony Committee of the American In-I am a member of the committee cooperating with the United States Bureau of Standards formulating the National Elec-I am a member of the American Electrolysis trical Safety Code. Committee. In the past I have been Chairman of a Telephone Committee and operate with the Bureau of Valuation of the Interstate Commerce Commission in the formulation of methods for inventorying telephone properties. I have served on a Committee of the Railway Telegraph Superintendents Association for the purpose of standardizing methods of telephone construction crossing steam rail-At two different times I served on the Overhead Line Construction Committee of the National Electric Light Association cooperating with the electric light engineers in standardizing methods of joint use construction between telephone plants and electric light plants and dealing with the requirements that should be followed in constructing high tension lines where they cross over telephone I have been a member of the National Joint Committee on Overhead and Underground Line Construction, Chairman of one of its sections, and I have served on a subcommittee of the National Fire Protection Association, dealing with the subject of high tension crossings.

Q. Now, Mr. Rhodes, are you familiar in a general way with the services which are rendered the Southwestern Tel. & Tel. Company by the American Telephone & Telegraph Company under the license

contract?

A. I am.

379 Q. I wish you would please outline briefly what the general staff of the American Telephone & Telegraph Company consists of, and the nature of the services rendered by it to the South-

western Telegraph & Telephone Company?

A. I should like with your permission to begin that answer by stating that the Southwestern Company is what we term an "associated company" of the Bell System. Each of the local or associated companies throughout the United States operates within defined territory and cooperates with the others so that by means of all the companies together and by means of the lines and system of the American Telephone & Telegraph Company, a comprehensive standard, uniform and universal telephone service is rendered throughout the United States. The American Company renders to these associated companies certain services under a license contract, which has been in existence since the early days. These services

are continuous and continuing and have been from the beginning of the business. They may be described generally as those services which are rendered directly by the large central organization, known as the general staff, which is maintained by the American Company for the benefit of the associated companies. The general staff consists broadly of the general administrative officials of the American Company, the Department of Development & Research, the Engineering Department, the Comptroller's Department, including the Accounting and Financial Departments, the Legal and Patent

Department, and the Insurance Department. With these services are those resulting from the relationships which the

American Company has established between all of these different departments of the general staff and the corresponding departments in all of the associated companies and the Western Electric Company, which does the manufacturing of the Bell System. Another branch of the service consists of furnishing telephone instruments to the associated companies, including the Southwestern Company and developing and improving these instruments and the transmission of speech thereby.

Q. Those instruments are furnished to the Southwestern Telegraph & Telephone Company for use in this local exchange here in

Houston, are they not?

A. Yes.

Q. All right, go ahead.

A. In connection with those services, I should like to point out that they are of an advisory and consulting nature. There is no line of authority between these General Staff Departments and the corresponding departments in any of the associated companies. An official of an associated company by a close and constant touch with the General Staff Department which has under its jurisdiction the particular functions with which he is concerned, keeps himself always informed as to the best methods and practices in his branch of telephone work and receives a great deal of advice but his specific instructions come to him from the executive officers of his own associated company.

Q. That is, the engineers and officials of the American Telephone & Telegraph Company have no direct jurisdiction over the men out in the field, that is, the engineers of the

Southwestern Telegraph & Telephone Company?

A. That is right.

Q. They get their instructions from the officials of the associated companies rather than from any of the officials of the American Telephone & 7 and Company?

A. Yes, sir.

Q. Now, have you prepared a diagram outlining the nature and scope of the services that you have just referred to?

A. I have.

Mr. J. D. Frank: We desire to offer that in evidence as Plaintiff's Exhibit No. 61.

(The paper was thereupon received in evidence, marked "Plaintiff's Exhibit No. 61, Witness Rhodes," and is filed herewith.)

Q. Now, will you explain this, Mr. Rhodes?

A. This diagram shows on a single sheet the subdivision of these general departments of the General Staff and outlines very briefly the principal functions of each of these departments, beginning at the top of the sheet and there is a subdivision into advisory, consulting, financial and general services, which with its subdivisions includes the greater part of the entire sheet. In the upper right hand portion is a brief outline of the instrument services. Now, passing

from the subdivision of the advisory, consulting, financial and general services, at the left hand side of the diagram is an outline of the functions of the Legal Department. The Legal Department furnishes to the associated companies prompt advice on any special points by means of experts on all local subjects

relating to the telephone business.

Q. Did you see me up in New York getting some information in the last few months?

A. I remember seeing you there.

Q. The attorneys of the Bell System throughout the United States have taken advantage of the Legal Department of the American Telephone & Telegraph Company?

A. I see them frequently when I have occasion to be in the por-

tion of the building that the Legal Department are.

Q. You see the General Counsel of this system up there frequently, do you?

A. Yes.

Q. All right, go ahead.

A. The Legal Department also issues to the Legal Departments of the associated companies a daily bulletin of current court and commission decisions. It issues monthly what are known as "Commission leaflets," giving more complete information in regard to cases. It provides a digest of commission laws, compilation of the statutes of each state relating to telephone companies and maintains a library of records and briefs in all important cases. The next department which I have outlined is the Insurance Department, and

briefly, it is concerned with furnishing advice so that buildings may be constructed to best promote safety and re-

duce fire risk. It provides standards for the inspection and maintenance of these buildings and makes periodic inspections of them. Next I have shown, bracketed together: the Department of Development and Research and the Engineering Department. The Department of Development and Research is charged with the duty of conducting experiments and tests to develop and advance the art of telephony, and making known its results to the associated companies. It also deals with the manufacturing branch of the system in the development of apparatus. The Engineering Department, which works in the closest of cooperation with the Department of Development and Research is concerned with furnishing the best advice to the associated companies in specific engineering

matters involving the application of these standards to the plants of the associated companies. The next department which I have shown is the accounting department and beyond that the Financial Department, and I understand you have another witness on that subject?

Q. Yes, sir.

A. So I will not go into that at this time. Under the Department of Development and Research and the Engineering Department are shown the principal headings of the work done, and I take it you will want me to describe those in greater detail after this so I won't refer to it any more at this time.

Q. Yes, sir, that will be all right. Now, all of these depart-384 ments are rendering services to the Southwestern Telegraph

& Telephone Company just as they render service to all the telephone companies throughout the United States?

A. That is the case, yes.

Q. Some of these services you will describe more in detail later when I call your attention to them?

A. Yes, sir. Q. Now, Mr. Rhodes, can you tell us what was the origin of the

furnishing of these services, or how it came about?

A. It has been a matter of natural evolution, growing out of the character of the business. I would like briefly to picture the situation of the telephone art at the beginning. At that time, there was no science or art of telephony. All that came from Professor Bell who invented the telephone was a fundamental idea. developed in order to serve the public and the present organization is a natural outcome and not an artificial one for furnishing these At the beginning, the American Company didn't have a completed thing to sell or to license the right to use. Except for these first crude instruments of Prof. Bell's, the apparatus necessary to render telephone service had not been invented. no switchboards, no call bells and none of the thousands of parts that now enter into the telephone system. A license at that time to use the telephone would have been of small value if it didn't cover improvements when they were made. Otherwise, the license would have been hampered when new instruments or apparatus was invented on account of the fact that the art and science

of telephony has always been in a state of active development 385 from the licensee's point of view. It was necessary for the license contract to be permanent. The licensee could not have afforded to have let his license terminate and be deprived of the right to use these new things as they were developed and used. associate companies naturally came to the American Company for technical advice and assistance, and the American Company

naturally furnished it.

Q. Now, you spoke of the associated companies coming there: You mean by that the companies that were associated with the Bell Telephone Company at that time?

A. Companies like the Southwestern Company.

Yes, sir. Well now, in the early history of these telephone

companies, the American Bell Company didn't have anything to do with them other than leasing these instruments, did it?

A. And furnishing these services which have been going on ever since I have been connected with the business and increasing from

time to time.

Q. As they leased these instruments, the persons to whom these instruments were leased naturally came to them for advice and assistance in connection with the operation of the instruments and assistance?

A. They did. Now, the furnishing of this technical advice and assistance has required a staff of technical, skilled men, and as the telephone art has grown this staff has grown and as far as we can see it must continue to grow until the art reaches the end of its

development, which I believe is a long way off. I think when 386 the right has been granted to use them-was granted in Texas, and like right- were granted all over the United States, if at that time the American Company had stood back and told each company in the field, to develop the art for themselves, that there is no question but what the result would have been failure and chaos. think that the furnishing of these services by the centralized organization has been clearly the best and most efficient and economical way of making the Bell invention useful to the public. The associated companies under this arrangement haven't been required to undertake broad technical development and research, because the Engineering Department of the General Staff has done this work for them. It has always been the duty of this technical department to follow up, investigate and test any technical ideas, and to develop and make simpler for application in the business everything necessary to enable the associated companies to furnish the best and most satisfactory service to the public. I have here a copy of a letter written by Mr. Vail, who is now Chairman of the Board of the American Company. At this time he was the General Manager of the National Bell Telephone Company, which was the predecessor of the American Company, to Mr. Pope, who represented the associated company in New York City. This letter was written in 1879 and, I think, is of interest as showing the principles which were established at that very early date in the business and which have still continued. If I may, I will read it.

387 Mr. J. D. Frank: We desire to offer that in evidence as Plaintiff's Exhibit No. 62.

(The letter was thereupon received in evidence, marked "Plaintiff's Exhibit No. 62, Witness Rhodes, and is filed herewith.)

Q. (Reading:) "Before putting in any exchange or starting in or even planning for a central office system, I think it would be well for you to consult thoroughly with Mr. Watson (Mr. Watson, by the way, was Professor Bell's assistant), and examine minutely into our standard system for central office connections. What we want to do in every case is to adopt the best system, and that we think we have.

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Then if there is anything better we should of course want to adopt that. Please let me hear from you in regard to this." I would like to say that this work of constantly seeking for the best in giving telephone service has continued throughout my connection with the company and it is a work that requires all of the time and effort of many highly trained specialized experts. It makes no difference where an idea comes from, whether from the General Staff itself or from an associate company, or from outside of the Bell System, our General Staff takes it up, develops and tests it. If it is worthy it is made standard and available for the use of the whole system. adopt good ideas, whoever originates them. The important thing from our standpoint is that they should be available for the

entire Bell System whatever there is in the art of telephony that is good from whatever source it may come. To that end, one phase of our work consists in bringing together all ideas, good, bad and indifferent, eliminating as the result of our engineering study the bad and the indifferent and making the good available for the entire system. When rights under patents that are owned by others are needed, we seek to acquire these rights for the use of the entire Bell System. I would like to say that the ideas and suggestions that come to us from outside the department, almost never come to us in completed form. A suggestion or an idea is not in itself anything that anybody can order or purchase. It must be developed and made available for giving service. And what I have in mind is that an associate company has got to order a definite type of cable or of spring-jack or of coil and the apparatus must be wired up in accordance with a definite circuit. Or, all the various parts and components of the equipment must fit in with each other and cooperate in the result of giving good service. You can't have substation equipment planned on one basis and the face of the switchboard planned on another basis and the cord circuits on still another basis and the terminal equipment on some other basis, all of these parts of the equipment cooperate in handling even the simplest local It must be designed, arranged, installed and operated with reference to such operation. This requires the reduction of ideas to

definite concrete form and their embodiment in specific ap-389 It has been our experience that this requires in general painstaking and protracted work and development skill of a high order and this is what our general engineering staff does for all of the associated companies.

Q. Well now, are your activities in assembling these ideas and

securing these patents confined to the United States alone?

A. No, if we find anything that comes from abroad, from Europe or any other part of the world, we follow that up. We endeavor to maintain close touch with scientific development all over the world.

Q. Now, I believe you stated you were a member of the Depart-

ment of Development and Research?

Q. And that the Engineering Department works in cooperation with your department?

A. Yes.

Q. Now, will you describe briefly the work done by this Depart-

ment of Development and Research?

A. I can help to make that clear by showing you organization diagrams of these two technical departments. I have here the organization chart of the Department of Development and Research.

Mr. J. D. Frank: We desire to offer that in evidence as Plaintiff's Exhibit No. 63.

(The diagram was thereupon received in evidence, marked "Plaintiff's Exhibit No. 63, Witness Rhodes," and is filed 390 herewith.)

A. (continued). This department is in charge of one of our officers, Col. J. J. Carty. There are five main divisions, the one at the left hand side of the sheet being concerned with organic development. Next is the research engineer who is dealing with advanced questions involving mathematical physics. At the middle of the sheet is shown the Outside Plant Development Section, of which I am in charge. Next is a section dealing with electrical interferences from electric light and power lines upon the telephone service and at the right hand side is another section dealing with transmission development. Under the term "transmission," we include those problems which deal with the loudness and clearness of speech transmission. Each of these specifications is further subdivided according to functions and I think that the headings given on this diagram are sufficiently clear to be self-explanatory.

I have another diagram dealing with the organization of the

Engineering Department.

Mr. J. D. Frank: We desire to offer that in evidence as the Plaintiff's Exhibit No. 64.

(The diagram referred to was thereupon received in evidence, marked "Plaintiff's Exhibit No. 64, Witness Rhodes," and is filed herewith.)

Q. Explain that to us. 391

A. This department under the Chief Engineer is subdivided into an Outside Plant Section at the left; another section dealing with equipment and transmission matters; a section in the center of the diagram dealing with traffic problems and by the term "traffic" we refer to questions involving all phases of operating the switchboards. Another section under the Commercial Engineer deals with advice on rate matters and commercial organization and office management, commercial office management, and the section at the right is a section covering the clerical force of the Engineering Department. In general, the functions are more or less similar between these two departments, but there is no duplication between them. As of January 1st of this year, these two departments comprised a total of 550 employees, of whom about 275 are engineers and the balance are draftsmen, map workers and the stenographic and clerical force. These engineers of these two departments of the General Staff are not only highly experienced specialists in all branches of telephone engineering work but nearly every man is a graduate of one or more of the more important American Universities, colleges, or technical schools of recognized engineering and scientific standing.

Q. Most of your engineers are Americans, are they, Mr. Rhodes?

A. Yes, practically all of them. I might mention that at the time that this country entered the war, we were called upon to do a large amount of consulting and confidential work for the Army and Navy of the United States. At that time, it became desirable for us to look ourselves over to be sure that there were no account who might have affiliations.

no enemy aliens within the department who might have affiliations that would render them unfriendly. Of all our force, we found that there were only nine of foreign birth and there was only one who had been born in a country with which we went to war and he had been brought to this country as a young man and educated here and was a naturalized citizen. We had never looked into that matter before because we had picked our men with regard to getting the best men for the particular job but it was a sort of source of satisfaction to us to know that the telephone was not only an American institution, but it had been developed by a staff which is so thoroughly In connection with the training of these men, it can be American. said that there are 78 different colleges and universities represented by the men on our staff. Numerous of these men held advanced degrees and some have studied at foreign universities. Our staff from time to time retains in an advisory capacity outside experts who are skilled in special materials, processes or practices wherever the-re servvices will assist in the work that is done for the associated companies. For example, at the beginning of the work, we were confronted by what promised to be a very serious situation in regard to continuing the supply of paper which is used for insulating wires in telephone That paper has always been made of old manilla rope stock. cables. New manilla fibre doesn't answer well for the purpose. A

393 large proportion of the supply of that material had come from seaboard cities of Europe and with the beginning of the War in Europe, that supply was seriously interfered with. We were confronted with the proposition of what it would mean if the associated companies had been cut off from the ability to obtain proper telephone cables. We immediately started various lines of work looking toward conserving the supply of the available kind of paper in this country and we also undertook an extensive series of experiments to investigate what could be done in the way of substitutes for the kind of paper that we had been using before. In connection with that work, we retained Dr. Arthur Little, who is one of the best known paper experts in this country, and we utilized his advice in a number of prospective changes that we were studying in regard to the matter of alternative types of paper to use. We found that we would be able to maintain the supply of the kind of paper that we wanted, but all through the progress of the war, this development work was continued and it is going on now, and we hope never to get caught in a situation of that kind again where the next available material will not be ready. I mention this because it is typical of the class of work that we do frequently, that the associated companies know nothing about until it is done, not even that it is going on, unless they happen to inquire. Due to the war, there were many problems. The question of dyes that were used for coloring the paper in cables came up and we had to make extensive tests to determine the best

dyes that we could use as a substitute for those that had been 394 The same question came up in employed before the war. regard to the cores for loading coils that I will refer to later. other interesting question came up in that connection. Shortly before the Armistice, in anticipation of the advance of the American Expeditionary force, the Government commandeered all of the stocks of our No. 17 twisted pair outside distributing wire and took for the army the entire output of all the available manufacturers of that type of wire. That is the kind of wire that is employed by the telephone companies for drop wire, connecting the cable terminals with the subscribers' premises. We were very glad for the Government to have this material for the purpose it was to be used to drag along the ground behind the army to maintain communications, but it necessitated our getting very active to determine what was the best alternative for the telephone companies to use in this country to maintain their service, and we picked out a form of weather-proof wire which involved constructing these drops of two single wires instead of a twisted pair and we prepared complete instructions covering the work of installing wires of this kind and this in a very short time was placed in the hands of all the associated companies around the country so that they wouldn't be hampered in the conduct of their business by the fact that the wire previously used for that purpose had been entirely taken by the Government. Another war problem concerned with the supply of material came about in this way: The United States Shipping Board in the construction

of wooden ships made use of large quantities of locust tree 395 nails to be employed in fastening the planking of the ships. They found that they were accumulating very large quantities of ends of these locust billets and they were quite worried about it as a conservation proposition as locust is a somewhat difficult wood to It happens to be the type of wood that is well suited for insulated pins and cross-arms and although these billets were slightly smaller than those that were ordinarily employed for making insulated pins, we worked up a changed design of insulated pins so that this material that was left over on the hands of the shipping board could be used for making insulated pins and cross-arms, and the shipping board advised us that they were greatly pleased at the proposition as it afforded an outlet for a great deal of this material that otherwise they wouldn't have known what to do with. I have called attention to some of these problems and to the general organization of these departments and the subdivision of these departments into highly specialized functions to bring out the point that by concentrating the experimental, research and development work on engineering problems for the Bell System in this General Engineering staff, we are enabled to have expert specialists on every branch of the work. It seems to me that no one associated company would possibly have enough work coming up to keep all of these different kinds of specialists busy, but by consolidating all problems of each variety of research and development and bringing them to our

General Engineering Staff, there is enough work of that kind 396 so that our staff can have a specialist on every technical point in the telephone business, whose duty it is to devote all of his time to it, to conduct investigations and researches pertaining to his specialty and to always know the latest word about it and to have that information on hand at all times for the benefit of each and all

Q. Now, from the standpoint of expense, could a company the size of the Southwestern Telephone Company afford to have an or-

ganization of that kind?

of the associated companies.

A. I should think that they could not have an organization in

any sense as complete as this central organization is.

Q. Now, you stated that previously, about a year ago, the Department of Development and Research and the Engineering Department had not been separated. What was the designation of that department before the separation was made?

A. The Engineering Department.
Q. Will you outline briefly its history and scope?

A. This Department has existed from the beginning of the telephone business. When it was formed, the whole art of telephony was comprised in the crude, and from our point of view, in efficient, telephone produced by Prof. Bell. At the beginning, Prof. Bell and his assistant, Mr. Thomas A. Watson, knew all that was known about the telephone art, and that was a little more than the fundamental id-a. Practically the entire art had to be created. At that time there was no science of electrical engineering, as we understand it today.

There were no colleges that taught it. Now, starting with 397 crude telephone of Prof. Bell. the American through the Engineering Department of the General Staff, and the relations that it established between itself and the engineers of the associate companies one one hand and the engineers of the Western Electric Company on the other hand, has developed the technique of the telephone art to the high state of efficiency to which it has attained in America, and it is a fact that today the United States might be called the "Mecca" of telephone men all over the world. They come here to find out how the telephone business can be best conducted.

Q. Just as a matter of interest, Mr. Rhodes, how does the development of the telephone in the United States compare with the develop-

ment of the telephone in the other countries?

A. It is much more advanced. There are more telephones per hundred population in this country than there are in any other part of the world. The next country is Sweden and the countries of Europe in general are provided, we would consider, very inadequately with telephones.

Q. Do you know off-hand about how many telephones they have in Sweden as compared with the telephones they have in this coun-

try?

A. I don't remember. I don't bear that in mind. I think I can find that out from some data we have here and I will let you have that after the adjournment if you like.

Now, in connection with this development work, our General Staff has done this work naturally because there was no one

else in a position to do it for these associated companies. 398 From the first there have been certain fundamental principles that have governed the work of our general engineering staff, and these have undergone very few improvements to meet new engineering problems. The associated companies needed this engineering information, help and technical advice and the American Company has furnished it from the Start. The associated companies have never been required to undertake particular technical development and standardization because our engineering department general staff has done that work for them. With very few exceptions, all of the great number of improvements between the first speaking telephone ever made and the vast telephone system of today, have been the result of this arrangement established by the American The Engineering Department of the General Staff has been the most important factor in the development of the transmitter, the metallic circuit hard drawn copper wire, many problems connected with the multiple switch-board, the common battery system, transposed lines, fine wire cable, duplex cable, the art of loading and the use of telephone repeaters. In every branch of the new comples art of telephony, fundamental improvements in construction and service and large economies to the associated companies have resulted directly from this arrangement established by the American Com-In this connection, I would like to bring out that this task of developing and advancing the art seems to be a never-ending one. In no time since my connection with these technical departments have they been more actively occupied in such work than

have they been more actively occupied in such work than at the present time and at no time have the departments contained as many engineers working on these development

problems as at the present time.

Q. Can you tell us how the Department of Engineering, and the Research and Development Departments keep in touch with new ideas?

A. Yes. In regard to keeping in touch with general scientific progress, we maintain a very complete laboratory of technical files and records. These extend from the invention of the telephone up to the present time and are most valuable and in constant use in our work for the Southwestern Company and the other associated companies. They represent the accumulated telephone experience of the world and I know of no other collection of telephone data in any way comparable to this and includes, of course, a complete record of all the work that has been done by our general staff. It also includes complete files of telephone patents, all important technical and scientific periodicals and other publications, both of the United States and abroad, the proceedings of technical societies and congresses. Now, all of this scientific literature is not obtained and merely filed away, but each copy of every technical proceeding and

of every technical and scientific paper, and each new patent is examined when it comes to us by specialists at the time of its receipt, in order that the engineering information that it contains will be immediately made known to each of these specialists in that department and the things that concern him and his specialty

400 are merked to him so that he will be able to read them and become familiar with them. Generally, engineering and scientific discoveries in this country and abroad are carefully studied by our staff so that where they contain possibilities of improvement in the telephone plant or service, the new ideas can be tested and the results made available to the Southwestern Company and the other associated companies. Our General Staff has been in a peculiarly favorable position to obtain from abroad under normal conditions information of all kinds pertaining to the telephone art on account of the cordial relations that we have maintained with the telephone administrations of foreign governments. Those, I should say, have been interfered with for five years past on account of the war and the difficulty of communication, but previous to that time representatives of our general staff were frequently sent abroad to make special investigations and to attend congresses and meetings of foreign telephone officials. These are some of the means by which the General Engineering Staff is enabled to keep in complete touch with all foreign developments and scientific problems that might be of interest or value to the associated companies. As examples of that, we have investigated a method of galvanizing iron that was discovered in Scotland and we have carried on tests in this country of a particular form of pole preservation that was suggested by an Those are merely examples of some lines of engineer in Hungary. work that we have followed out.

Q. If you hear of a good idea or development of some particular apparatus that would be of benefit to the associated companies, you go and investigate that regardless of where it may be?

A. Yes, that is what we conceive to be our job.

Q. I wish you would please classify properly the services rendered by these technical departments of the General Staff of the American Company to the associated companies in general, and to the South-

western Telegraph & Telephone Company particularly?

A. They can be divided broadly speaking into two classes. In the first would be work on problems for all of the associated companies in which the Southwestern Company participates. Work of that kind is largely undertaken on the initiative of our General Engineering Staff and not on specific request from the associated companies. In some cases, however, the work may be undertaken at the request of one of the associated companies or as the result of difficulties experienced by one of them. Problems of that kind are worked out by us for the conditions obtaining in each and all of the territories throughout the country and all of the associated companies are advised as to the results. In the second class would be specific work done for the Southwestern Company. That work is usually undertaken at the request of the engineer or some other official of the

Southwestern Company and we perform that specific work at his request. I have some examples of that type of work that I can give you later.

Q. Now, will you explain the relations of the General Engineering
Staff to the engineers of the associated companies like the
402 Southwestern Company that are in the field. By the term
"General Engineering Staff," I mean the two departments
of the American Company that you call the Department of Engineering and Research and the Engineering Department. I believe you
have already touched on one part of that. Is there anything else
that you have to say on that? As I understood the testimony you
gave this morning, the two Engineering Departments are separate,
so far as the American Company having any authority over the

engineers of the associated companies?

A. Yes, and there are some points in regard to the relationship that I would like to bring out. The engineers of our general engineering staff are in constant touch and communication with the engineers of the associated companies like the Southwestern Company's engineers, in that field, but there is no duplication of work between them. The engineers on our staff are experimenting, developing and standardizing. The engineers of the associated companies, like the engineers of the Southwestern Company are constructing and operating and maintaining their plant. The difference is something like that which exists in the Army where the field officers are concerned with where to place the guns and when to fire them and what to fire them at, and they don't have to worry at that time about the design of the gun, or the ammunition, or whether the ammunition was of the right caliber to fit the gun. Those are problems that are worked out by the staff of the Army, which is always in touch with the field, and is utilizing fully

the experience of the staff plans. Our organization operates 403 generally similar to that; instead of having in addition to the present field engineering force, a large number of consulting engineering departments scattered around the country in each operating company or group of operating companies, we have one which does the experimenting, the research and the consulting engineering for the entire system, whereas each associated company or group of associated companies does for itself the field and operating engineering. We have selected from the field from time to time men for our general staff who have had great practical experience and good training, and we have also sent men frequently from the staff to the associated companies, so that there is a flow of new blood into the staff and from the staff into the associated companies. I have on my staff now a man who came from the Southwestern Company and who was employed at one time here in Houston. that I would like to bring out in connection with this relation with the field engineers is that instead of our general engineering staff being in any sense a duplication of work done in the field, that it distinctly operates to prevent duplication, and it is, I think, worth while to point out that it is no reflection on the field engineer, who is a specialist in his work, that he is not an expert on those questions of development and research. It is a case of each body of men being expert in their own sphere of the profession.

Q. Now, is there any of this development and research work that you have been speaking of that goes on without the knowl-

404 edge of the engineers of the associated companies?

A. Yes, in connection with the development work that we do, there are many other things that are of great importance, which the associated companies don't know of now and some of which they will never know anything about unless they call on us for information, and I will explain that later. In the first class are things like the improvements which rendered transcontinental telephony possible, and also wireless telephony over great distances, and also the These were matters that came to the multiplex telephone system. associated companies and to the public all at once. Each one represented the work of years that was being done for the entire system and there are matters of the same kind that are now under way. In the class of the things that the associated companies never know of, unless they inquire, the very great number of pieces and apparatus and methods and things that are offered to us and tried out and abandoned, because they are not of value. I think that the worth of this service to the associated companies, it might be called the mistakes that they will not make, is very great. As far as I know, there has nothing ever been recommended to the associated companies as standard by our general staff and subsequently abandoned for something that was known beforehand. Of course, we are revising our standards very frequently, but that always comes on account of advances and discoveries that are made subsequent to the previous recommendation and not due to the fact that we overlooked or forgot something that we ought to have known about when we

made the first recommendation. I think there is a contrast 405 there between our operating engineers in the field and the operating engineers in many other lines of work, who have to experiment on their own account because they have no organization like ours to turn to for advice as to what is the best thing to do.

Q. Now, Mr. Rhodes, take up and explain the relationship between the engineering staff of the American Company and the Western Electric Company. The Western Electric Company is the man-

ufacturing branch of the Bell System, is it not?

A. Yes.
Q. Mr. Rhodes, this morning, I believe at the time we adjourned, I had just asked you to explain the relation between the Engineering Staff of the American Telephone & Telegraph Company and the

Western Electric Company.

A. Yes, sir; the engineers of the Western Electric Company, which is the manufacturing branch of the Bell System, work in close co-operation with the engineers of the general staff. The headquarters of both are in New York. In brief, the relations are these: The General Engineering Staff determines what is required in the way of apparatus to meet the needs of the business and to give the best service to the public. In this determination the associated companies are freely consulted by us, whether certain types of apparatus for the Bell System are to be manufactured at all is not determined by the manufacturing branch of the Western Electric Company, but the engineers of the General Staff determine that and they 406 determine it, not from the point of view of what the manu-

facturers desire to sell. In producing new apparatus very important work is done by the engineers of the General Staff before the Western Electric Company's engineers are brought in. Western Electric engineers are only brought in when some new device, which is an article of manufacture, is required. They are not brought in in a great deal of the staff work. That is, on traffic matters, operating matters, construction methods, operating methods, they do not come in at all. Their function, broadly described, is to perform the laboratory work and to do the manufacturing engineering and mechanical designing. The engineers of the General Staff study the needs and requirements of the business and determine what the requirements are. They study the needs and requirements before the Western Electric engineers are brought in, so that what is developed is the thing that, after we take it up with the associated companies and avail ourselves of their experience, we find will be best suited to serve the public most satisfactorily. Now, the development of a new piece of apparatus begins by our laving down for the Western Electric engineers what the requirements of this new apparatus shall be, the result which shall be accomplished by it, and our engineers and their engineers consult freely together all through the progress of the development work. We also consult freely with the engineers of the associated companies to get information from them, just as a physician gets information from his patient in

order to enable him to diagnose the case. development work of the company is completed, our General Staff passes on the final solution; that is, we make tests of the apparatus and determine the methods under which it will be used, so that what the Western Electric Company undertakes to develop, and what is finally accepted, is determined by the General Engineering Staff, which decides what will be best to enable the associated com-

panies to serve the public most satisfactorily.

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Q. How does the General Engineering Staff make known the re-

sults of the work to the associated companies?

A. In several ways. We send out bulletins on some of the most complete lines of work. We issue from time to time circular letters, and about one thousand of these circular letters, in all, have been issued. In many cases we give them information by reason of direct or special letters and other information is given them by sending them specifications. Nearly four thousand have been issued to them so far. Then we send them many thousands of drawings and we have very frequent conferences. In some cases our Staff Engineers go into the field and visit the engineers in the field and take up matters with them, and in other cases the field engineers come to New York to consult with our staff. A large amount of information is in the form of new and approved apparatus, and in addition to that, we do a large amount of consulting engineering work and answer specific requests for information. I spoke of the matter of bulletins, and I have here a typical bulletin. This
408 is a bulletin on transmission equivalent; also a supplement,
and some examples illustrating the use of the bulletin on
transmission equivalent.

Mr. J. D. Frank: We desire to offer those in evidence as Plaintiff's Exhibit No. 65.

'(Thereupon said Exhibit was received in evidence by the Court, and marked Exhibit No. 65, as requested.)

A. Every piece of apparatus that is introduced into the telephone service causes more or less of a transmission loss. And this bulletin gives the results of measurements of the transmission losses produced by various pieces of apparatus, so that by means of it an engineer of an associated company can determine what the proper amount of transmission loss in each circuit is, and by tests can determine whether the circuit is well maintained, so that the transmission losses are not larger than they ought to be. Now, while we are still on that subject of the information set out, I have a list giving merely the title of some illustrative circular letters and specifications that have been prepared by our technical department and sent to the engineers of the associated companies. This list mentions these circular letters and specifications by title only.

Q. As I understand it, this merely gives the titles of some of the

circular letters and specifications that have been prepared?

A. Yes, sir, with the idea of showing, in a general way, the scope of the field covered by them.

Mr. J. D. Frank: We offer the list in evidence and have marked same Plaintiff's Exhibit No. 66.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 66, as requested.)

Q. You are sending out those bulletins all the time as you make studies of the various problems concerning the telephone companies?

A. Yes, sir.

Q. And that work is continued at the present time?

A. Yes, sir.

Q. Would you say that the functions of the General Engineering Staff were those of a clearing house, or similar to a clearing house?

A. I should say only to a limited extent. I do not regard the term "Clearing house" as a particularly apt characterization of the work we do. That term implies collecting something and distributing. The work we do is broader than that, because nothing we do is of a routine nature. The policy is not to wait until the associated companies find themselves throttled or hampered as the result of the expansion of their business beyond the point where existing means and methods are adequate to meet the demand of service, but we endeavor to anticipate conditions of growth and of new requirements sufficiently in advance, so that we are able to develop and have ready for service the new methods, material and apparatus

when required, so that the orderly expansion of the business of the associated companies will not be choked. It might 410 be termed a policy of preparedness, and in this way many of our tests and researches extend over a long period of years. have in mind some insulator tests that have been carried on on the roof of one of our buildings, and those tests have been going on over eighteen years.

Q. Would you say, -is it a fact that the General Staff forces its ideas on the associated companies; in other words, is it compulsory that they accept the ideas advanced by the General Staff,—engineer-

ing staff.

A. No, sir, we don't work that way. We furnish this information to the associated companies and we give them the reasons for it, and they almost invariably follow them because they have learned from results that working with us, the information we give them is correct, but they are not forced to follow it and very frequently we give them several for accomplishing the same general result and the advantages and disadvantages of each, so that they determine which one of them best suits the conditions they have to meet. In general they follow our recommendations voluntarily, because they decide it is to their advantage to do so.

Q. They are at liberty to refuse to adopt any of your ideas if they think it is for the best interest of their business not to adopt

them ?

A. Yes, sir. Q. You have been speaking of some of the services rendered Tell us whether different methods have under the license contract. been followed from time to time since the arrangement was originally entered into for making the payment for the 411 service you have been describing, and in a general way.

what they have been,

A. I understand that originally the payment made by the associated companies was \$14.00 for a set of instruments a year, and by a set of instruments I mean, a transmitter, the induction coil and the receiver. That payment was reduced from time to time, and after a while it was based on the amount that was received by the associated companies on each particular instrument. if the subscriber paid \$8.00 a month for his service, the payment was one amount, and if he paid \$5.00 a month, it was a less amount. That method was complex and it required a large amount of bookkeeping on the part of the associated companies. The payments at that time, as you will see from what I have said, were proportioned to the revenue that the associated company received. So there was a change made about 1902 to the present basis of a per cent of certain of the gross revenues, which reduced the accounting of the associated companies very greatly. The change was not a radical one, and just why it was made 41/2% instead of 41/4% or 41/4% or 5%, I don't know, but I have always understood the change resulted in a substantial reduction in the payments made by the associated companies; that it was offered to them and accepted by them. I further understand that every modification that has been

made from the early arrangement has been in favor of the associated As the business has developed and the years go on, the companies. payments have been reduced and the services rendered to

the associated companies has increased. 412

Q. Under the present arrangement the associated companies pay 41/2% on the gross revenue?

A. Yes, sir.

Q. Why wouldn't it be better for the Southwestern Telegraph & Telephone Company, and the other associated companies, to pay for the actual service rendered by the General Staff whenever they

get the services?

A. Under the present arrangement the Southwestern Company is free, at all times, to come to us and get the best information, advice and assistance that is obtainable. We think it would be a bad thing to attempt to measure and prorate these services. associated company were required to make a separate payment every time it asked a question, as it would if it was going to an outside engineering firm, we fear it might be reluctant to do so and they would fall behind in efficiency. There would be a tendency toward duplication, because the same or similar questions would be asked by different companies, and motives of economy might induce each company asking the question to limit the interrogations to the narrowest limits that would serve its purpose. Piecemeal investigations of that character would increase the expense of the investigations as a whole to all of the companies, and would delay investiga-Furthermore, motives of economy would tend to deter each company from incurring expense as to work, looking into the future in which it was not apparent that the company had any immediate

interest. The same motive would tend to deter each company from requesting the investigation of broad and gen-413

eral questions in which all of the companies were or might become interested, as it might feel that all of the companies should The existing arrangement encourages the associated companies to bring to our General Staff any questions in which they are interested and permit the most thorough and broad investigation by our General Staff, which is a result that I do not think would be attained if each company came to the Staff simply with what it conceives to be its specific requirements under an arrangement for payments such as would be made with any outside engineering firm that was occasionally employed.

Q. Does the American Company operate any local telephone ex-

changes? A. No, sir.

Q. Has it what is known as a Long Line Department?

Yes, sir. That department is organized practically as a separate company, with its own officials and engineers and it operates the long distance lines that connect the territory of the several associated companies.

Q. Would you need your entire staff for the long distance lines,

or any considerable portion of it?

A. Not on anything like the scale on which it is maintained.

The Long Line Department has its own engineers, just like an associated company. The plant of the Long Line Department is from 8% to 10% of the plant of all the associated companies taken as a whole, and I don't think the work we do for the long lines exceeds that proportion of 8% to 10% of the total amount of work.

414 Some of the work we do does benefit the long lines as well as the associated companies,—work we do in standardizing materials and methods in toll line construction helps the long lines and helps the associated companies, but there is quite a great deal of work we do pertaining to exchange methods that has no bearing on the long lines in any way. The great bulk of our work is for

Q. Does the long line pay $4\frac{1}{2}\%$, or a certain proportion of their gross receipts for the services you render them, just as the associated

companies do?

the associated companies.

A. I understand that they do.

Q. You render service to them just as you render service to the associated companies?

A. Yes, sir.

Q. This morning you mentioned something about war work that was done by the General Staff of the associated companies. Did it do any work of this kind for the Southwestern Telephone & Telegraph Company, or any work that helped them out in the problems that confronted them during the period of war?

A. Yes, sir. Just about a year before the declaration of war by the United States our General Staff set on foot preliminary plans to meet war conditions if they should arise. We got in touch with the Council of National Defense, the President of the War College, the Chief Signal Officer of the Army and Director of Naval Communica-

tions. With the break of diplomatic relations with Germany our staff immediately got in touch with officials in Washing-

ton in order to establish harmonious and effective methods of One of the early problems was the equipment of the co-operation. nation's army and the national guard camps and cantonments. One of the army camps I think was Camp Logan, some five or six miles from Houston. It was first necessary to find out what the requirements of the government were, and our staff was able to do this on behalf of all the associated companies, and we made arrangements sufficiently in advance to secure the necessary supplies of material for providing telephone service at these camps. it possible for the associated companies, with a minimum effort on their part in every case, to provide the government service where and when it was needed without delay, and with a minimum of interference with the commercial service. The United States Coast Guards in time of peace patrol the coast, assisting ships in distress and aiding in enforcing the revenue laws. On a war basis the coast guard undertook to maintain a lookout on the Atlantic and Gulf coast to detect and report to the proper authorities submarine or any other enemy operations. The communication system of the coast guard was inadequate for war purposes, and at the request of them we designed a new system and directed and supervised the installation, providing means whereby the coast guard stations could get into communication with the naval district headquarters or general headquarters of the navy at Washington. I might mention in that connection that many of the engineers of the Bell System

went into the army and navy. The head of our Department of Development and Research, Colonel J. J. Carty, became a Colonel in the Signal Corps of the army, and, all in all, thirteen battalions of officers and men were recruited from the Bell System. There was, from our forces, organized a Division of Research and Inspection for the American Expeditionary Force in France, which was largely recruited from the Scientific Staff and Laboratory forces of the Bell System. For the successful handling of the American Expeditionary Forces it was necessary to construct and operate very extensive telephone and telegraph systems in France, which had to extend from the base on the coast to the different army headquarters It had to include camps and supply headquarters, at the front. branch stations, hospitals and other sites, and it had to provide for communication with the principal center of our allies and with the regular French telephone system. Our engineers assisted and cooperated with the Army Signal Corps in designing the system and determining the material used for its construction and in applying our latest methods for obtaining the most rapid service. The Army Signal Corps requested our advice as to what could be done in operating wireless telephones between airplanes and the ground, and similarly, the navy desired telephone communication between submarine chasers that were operating as a fleet discharging depth bombs. It was very desirable in the operations of squadrons that the commanding officer could talk with every commander of every vessel in his squadron. That requirement could only be met

by a radio telephone system. Startin- with our work, previous work before the war, we were able, within about nine months, to complete the development work and arrange for quantity production of radio equipment designed for airplanes and submarine chasers. We were able to accomplish in a very short time important results which had been needed since the beginning of the war, but which had not been obtained by either our allies or enemies. Considerable work was done on radio telephone equipment for the army and navy, especially for amplifying signals and developing small portable sets for field use. Just after the beginning of the war the Secretary of the Navy created a special Board to handle anti-submarine problems. In addition to the regular naval officers, there were four advisory members, one of whom was one of the principal engi-The work on the problem of submarine neers of the Bell System. detection in our laboratory reached very large proportions, over one hundred engineers of the Bell System at one time were engaged. resulted in the development of a detecting apparatus whereby, by a listening device connected with submerged telephone transmitters of special design placed at a number of points, it was possible for an observer to switch from one of them to another and adjust his apparatus so as to give the direction of the submarine from that telephone. By switching from one transmitter to another and changing his adjustment and locating the line on which the sound was heard, by projecting those lines on a map, it was possible to determine the point of intersection which was the place that the

submarine was at that moment. By continuing those oper-418 ations it was possible to tell the direction that the submarine was moving, and the rest of the treatment consisted of the application of depth bombs by the navy. This same system was used for locating airplanes in flight, and at the time of the armistice the work had progressed so far that the apparatus and equipment we developed had made it possible to locate with accuracy the position of an invisible airplane, so that the anti-aircraft batteries could be concentrated on it with very good possibility of destroying it. system was also used for locating enemy artillery, and I have been told, although this is hearsay evidence, by one of our engineers connected with it in France, that it resulted in keeping the Germans' heavy guns ten miles further back than they wished to keep them, because they were located so accurately that there was a very good chance of their being destroyed. They also did work on a secret ciphering device used for transmitting telegrams, whereby the cipher was continually changed, and cipher experts have never yet been able to work that cipher. One of the most important things about military cipher is that it can not be determined by the enemy by overhearing and the information detected. I think the bearing of this work on the present case is, perhaps, two-fold. In connection with the equipment of camps and cantonments we did relieve the associated companies from doing much preliminary work. other bearing is the success of the staff in solving these problems and an indication of the capability of the staff in working for the associated companies.

Q. Up to this time we have been touching somewhat generally upon the activities of the General Staff of the American Telegraph & Telephone Company, and in relation to problems that confront the associated companies. I would like to take up some specific matters of work of the General Engineering Staff, and in that connection will ask you what the General Engineering Staff has accomplished in the development of hard drawn copper wire?

A. In the early days of the telephone service the type of wire that was used was the type that had been used by telegraph companies before that time, and was iron wire. It was poor for telephones, it was difficult to talk over and the circuits were noisy. The limit over which you could talk with that type of wire with any degree of success was forty to fifty miles. Our engineers at that time experimented with various kinds of wire. The wires at that time were all single wires, operated as ground circuits. After a great many experiments, we used a return wire and that resulted in a great improvement in the telephone transmission, but even then, the lines were sometimes clear and at other times noisy. Moreover, there was overhearing from other circuits. The line was unbalanced electrically, although at that time there wasn't enough known about it to know what the cause of the trouble was, but our engineers did dis-

cover that by placing the wires closer together, side by side, that the results were much more satisfactory. It was found out unless the wires were, at periodic intervals of space, crossed back and forth, transposed, as we call it now, that the lines would be noisy. That was all worked out by our Staff Engineers. 420 With improvement in the transmitters, in the receivers, by the use of these metallic circuits, with transposition, the range of telephone communication was extended, but even then the limit was all too soon reached. Our General Staff studied further the electrical laws governing the transmission of speech and investigated the properties and nature of iron wire, with the result that it was found that if the system was to meet the public's demand that something better than iron wire would be required. Various metals and allovz were studied, and it was found that copper best met the theoretical requirements, but copper that was made into wire at that time was too weak mechanically to be used in wire strands between poles. It had the necessary electrical property, but it was too soft and had not the required strength. It had only about half the breaking strength of iron wire of the same size. Our General Staff Engineers took up the problem of manufacturing copper wire and went into the work of manufacture, and one of the engineers of the Staff, Mr. Thomas B. Doolan, who had been familiar from previous experiments with it, undertook a series of experiments in drawing copper wire cold, through a series of dies, so as to harden it. The softness of the copper wire used before that was due to being softened by the heat produced by drawing the wire through the series of dies, and by deluging it with cold water during the drawing operation; and he de-

veloped this means of hard drawing the wire, which gave it a degree of tensile strength very much greater than that of the soft wire; in fact, so that it had a tensile strength substantially equal to that of iron wire of the same size, therefore permitting it to be used satisfactorily in strands of what we term open wire toll The production of this hard drawn copper wire lead to a new technique in the manufacture of wire itself, and also in the method of handling it, stringing and splicing the wire, maintaining it and attaching it to insulators. All of these details were worked out with elaborate care by the engineers of our General Staff, and an experimental line was constructed for trying out the properties of the new material, and when it was completed it was put at the disposal of the associated companies and has since become standard all over the Without this type of wire, the development of telephone systems would be greatly restricted. I might say here, in connection with mentioning some of this work which has been done in the past by our Staff Engineers, I don't desire to give the impression that the payments made by the Southwestern Telegraph & Telephone Company under the license contract are in any sense a royalty or tribute paid on these past achievements. The service our General Staff performs is a contributing one and very important work for the benefit of the associated companies is now under way. I don't think, however, that these past achievements-I do think that these past

achievements serve as a tangible illustration of the capabilities of our staff.

Q. You are just using these as illustrations of some of the accom-

plishments of the General Staff?

422

A. Yes, sir. Q. I wish you would take up and describe the development work of the General Engineering Staff in connection with cables?

A. The operation of telephone wires in cables at the beginning of the business was a very hard problem. At first there was no satisfactory method known, even in cities, and much less in suburban areas, for placing wires in cables. Not only was the expense of the early cables such that it was commercially impossible, but even at a prohibitive expense there was no satisfactory method known of placing wires in cables. As early as 1880 some experimental cables were tried in short distances along side of a railroad track in Massa-In 1883 several cables were laid in Boston, and as showing what the state of the art was at that time, I would like to read a short paragraph from the annual report of the American Bell Telephone Company of March 28th, 1883:

"In the work of putting wires underground, the progress has not been as satisfactory as could have been wished. Underground cables have been laid in iron pipes in Boston in two directions from the main office, one line being twelve hundred feet and the other fifteen hundred eighty-five feet in length. Conversation is successful within short limits over these lines, but where they are used in connection with long lines * * * the voice becomes indistinct."

Now, I have a sample of a new cable which is generally similar to the type of cable which is used at this time. This is not a piece of

that old cable, there is none of it available so far as I know, but this is a cable of the same type of construction, where the 423 wires are insulated with a rubber compound.

Q. You have a photograph of that?

A. Yes, sir.

Mr. D. A. Frank: We offer that in evidence as Plaintiff's Exhibit No. 67.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 67, as requested.)

A. Now, using that type of rubber insulation, not only was the sound of telephone conversation carried on through that cable badly muffled, but there was very serious overhearing from one circuit to That developed the fact that rubber, which another in the cable. was the best insulation that was known up to that time, was unsuited for telephone purposes. That type of cable was formed by the development of a cable in which fifty wires were wrapped with cotton and were then drawn into a pipe that was filled with coil. came the use of wires still covered with cotton, but impregnated with moisture-proof compound, and then our General Staff Engineers, in connection with the engineers of the Western Electric Company,

developed a type of cable in which dry cotton was used. It was found that cotton, after it had been baked dry, so as to expel all the moisture, was a very good insulator if placed in a lead pipe and properly sealed up to exclude moisture. That was a very great step in development. Cotton, up to that time, was thought to

424 be a bad insulator and it was on account of the moisture it We conducted a long series of experiments, extending over a number of years, and finally developed the best type of cable known for telephone transmission in which the insulation consisted of dry paper wound around the wire and hermetically sealed in a lead sheath. The first cable of that type, which was made about 1889, contained fifty pairs of wires insulated with dry paper without the use of any paraffine or other sealing compound. Our work has covered, in the development of cables, a period of thirty years. subject has been one of continuous work and experimentation on our By 1892 we were able to put one hundred pairs of wire in a By 1895 we had in 150 pairs. In 1896, 200 pairs. were all wires of No. 19 Gauge. The development of the so-called fine wire cable came about at that time. In 1900 and 1901 we developed cables containing 300 and 400 pairs of No. 22 gauge wire. In 1902 we reached 600 pairs of 22 gauge wire. In 1912 we produced 900 pairs of 22 gauge wire, and in 1914, by using a still finer wire, No. 24 gauge, we produced a 1,200 pair cable and I have a sample of that cable here.

Q. That is twelve hundred pair?

A. Yes, sir. Speaking precisely, it contains twelve hundred and twelve pairs,—twenty-four hundred and twenty-four wires. The extra pairs being put in as spares, so that if a few pair are injured in the process of drawing in, there would still remain twelve hundred good pairs.

425 Judge Powell: Over twelve hundred wires in there?

A. Yes, sir. Perhaps it would give a little better idea of the amount of wires in there if I take a sample of that cable which is a little more than an inch long and piece out the wire that it contains.

(Thereupon the witness showed a sample of the twelve hundred pair wire cable.)

I might mention that the reason for these wires being colored is for ease in identification in splicing the wires together. They are colored in various combinations, so that the splicer does not have to go through a very great number to make the right splice.

Q. It takes two wires for each subscriber?

A. Yes, sir.

Q. The man who is connecting up those wires has to be somewhat of a specialist in reading colors, don't he?

A. Yes, sir, he can not be color blind. Q. Have you a photograph of that?

A. Yes, sir.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 68,—a twelve hundred pair cable fanned out.

(Thereupon said Exhibit was received in evidence by the Court and marked Plaintiff's Exhibit No. 68, as requested.)

426 Mr. J. D. Frank: We also offer this photograph, twelve hundred pair cable, section, as Plaintiff's Exhibit No. 69.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 69, as requested.)

A. In order to make clear this development of putting more and more pairs of wire in a cable, I have prepared this exhibit, which shows the principal stages in the development of cables from 1888 to the more recent developments which are standard, in 1914. These are actual size photographs of sections of these cables. I would like to say that the largest cable in the Houston Exchange is the one that is shown here over the date 1912.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 70.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 70, as requested.)

A. I would further call attention to the fact that by using this latest type of cable containing twenty-four hundred wires, we are able to place in one duct of underground conduit as many wires as the old one hundred wire cable of 1888 would have required twenty-four ducts to accommodate.

Q. So that that resulted in saving, not only the amount of wire

but also the underground conduits?

A. Yes, sir. A few years ago I made an estimate of the saving made for the Bell System throughout the country,

due to the use of this fine wire cable, over what the expense would have been if they had been compelled to continue to use the large No. 19 gauge, which had been standard up to that time. The saving in first cost of cable was about \$69,000,000.00, in first cost, corresponding to an annual cost of about \$10,000,000.00 per year. The duct saving amounted to \$20,000,000.00 in first cost and an annual saving of about \$2,000,000.00, per year.

Q. That is for the associated companies?

A. Yes, sir, as a whole. Now, this work represents a continuous train of development which has required careful and exhaustive work and invention and development; and at every stage it has required a study of the material used, the process of manufacture, the transmission efficiency of the cable and other factors. We have, within a little over a year, completed further developments on small diameter cables, extending the principles used in some of the latest types of cables to small size cables, which has resulted in a saving of from 8% to 10% in the cost of these small cables. In all of this work the durability of the material used is a matter of great import-

ance. In all of this work, if this paper insulating material or the dye with which it is colored contained any chemical substance that would produce internal decay in the cable, it would result in a calamity in all the exchanges over the country; so it has required careful study by chemists before we started on any new steps. There is rather a typical case of this development work which I would like to describe in connection with the sheath surrounding these

cables. Very early in the work it was found that lead was 428 not the best material to make cable sheaths from. That it didn't possess the necessary mechanical properties and it didn't have the necessary ability to resist corrosion under some soil conditions, so that in the early days of the business we started making cables of an alloy consisting of 3% of tin and 97% lead. The price of tin, since about twelve evars ago, has been increasing and has increased to such an amount that, although only 3% tin has been used in these cable sheaths, the cost of the tin amounts to a very considerable sum of money. So we started on a long series of studies and experiments, for the purpose of devising an alloy that would be at least as efficient as the 3% tin alloy had been and would be We started first with laboratory experiments covering a wide range. Alloys of lead and antimony, lead and bismuth, lead, nickle and copper, lead tin and antimony, all of them in various proportions, so that we studied, in all, somewhere from twenty to twenty-five different alloys. We took samples of these materials and we made breaking strength tests on them; and we made the material up into cable sheaths and placed it in a rapidly vibrating machine, where the number of vibrations were counted, in order to make sure as to its ability to withstand repeated vibrations such as the cable is exposed to in the case of aerial cable that is supported by messenger wires. We also made tests for chemical corrosion and for electrolytic corrosion. We extracted liquid from the soil of man-holes and made corrosion tests in what I presume would

429 be called a deluxe solution of hippuric acid. As the result of these laboratory tests we picked out the most promising type of alloy and we constructed lengths of full size cables, lengths of four or five hundred feet of cable sheath, with the new type of alloy, and in comparison with sheaths of previous standard type of alloy, I mean 3% alloy, we conducted experiments repeatedly, pulling these cables into and out of the ducts, pulling them out eight or ten times, to see which one would show signs of cracking first. We placed some of them on the elevated structure in New York, where the branch lines join the main line, such that the structure was subjected to rather severe vibrations, due to the passage of the trains, and for a period of over two years those test cables were under observation, and as the result of all this work, which extended over a period of four or five years, we were able to recommend an alloy consisting of 1% antimony and 99% lead, which was in all respects at least equally efficient as the alloy used before, in several respects better, and that has been for about seven or eight years at the disposal of the associated companies. The immediate effect of that change was to make a saving of 8% to the associated companies in the cable which they bought. During the war the saving was somewhat less than that, because antimony was used in great quantities in the manufacture of schrapnel.

Before leaving this matter of cable development I would like to bring out that the advance in cable art, together with other important improvements that have been made comparatively

recently, it is now possible to carry on satisfactory conversation over wires and cables more than a thousand miles in
length, and they employ wires no larger than were used twenty-five
years ago in those cables which were mentioned in that early report
of the American Bell Telephone Company, which seriously interfered
with transmission when used in lengths of about a quarter of a
mile.

Mr. D. A. Frank: How do you get a cable two thousand miles long?

A. There are cables five hundred miles long. These particular tests that I have listened to over one thousand miles were made by looping it back and forth in a cable about 90 miles long. The longest cable we have in this country, and it is very much longer than any other in the world, is a cable reaching from Washington, D. C., to Boston—five hundred miles. In connection with this subject of cables, we have done a great deal of work on the best methods of splicing and the best material to be used in connection with cable splicing, and generally the best arrangement and practice to be followed in splicing cables, and the way in which this information is transmitted to the associated companies is typical of a great deal of our work, and I think it might be well to introduce it here. We prepared what are termed hand books, giving in great detail and copiously illustrated detailed instructions to be followed to attain the

best results. This book is Specification No. 3912, entitled "General Cable Splicing."

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 71.

(Thereupon said Exhibit was received in evidence and marked Plaintiff's Exhibit No. 71, as requested.)

Q. This is used in connection with the operation of an exchange? A. Yes, sir. I have another one, Specifications No. 3913, "Underground Cable Splicing."

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 72.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 72, as requested.)

A. And Specifications No. 3914, "Aerial Cable Splicing."

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 73.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 73, as requested.)

A. And Specifications No. 3915, "Block Cable Splicing."

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 74.

(Thereupon said Exhibit was received in evidence by the 432 Court, and marked Plaintiff's Exhibit No. 74, as requested.)

A. Specifications No. 3916.

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 75.

(Thereupon said Exhibit was received in evidence by the Court, and marked Plaintiff's Exhibit No. 75, as requested.)

A. On Saturday I was riding around in Houston a little, looking at the telephone plant, and at that time I was with the splicing foreman looking at some underground construction, and I asked him if he had any occasion to use these hand-books, and I found that on his car he had copies of all of these hand-books. He was carrying them around with him.

Q. He did not just file them away when handed to him?

A. Apparently not, in that case.

Q. Is that all you have to say on that, Mr. Rhodes?

A. I think that is probably enough for your purposes. I could

go into all these matters at greater length if you desire it.

Q. Suppose you take up and describe the works of the General Engineering Staff in connection with the development of what is known as phantom circuits.

A. Has it been brought out in this case what that is?

Q. No, sir; I think you had better explain it.

A. I have already mentioned that a telephone circuit ordinarily consists of two wires placed side by side on a cross arm. Now,

433 let us picture a second circuit consisting of two more wires placed side by side and alongside of the first circuit. By connecting those wires together it is not only possible for a party "A" to talk to a party "B" over one pair of wires, and a party "C" to talk to a party "D" over the second pair of wires, but simultaneously two other parties—"E" and "F"—can talk over those four wires, and that circuit which permits that talk to go on is termed a phantom circuit.

Q. In other words, two or three telephone conversations over the

four wires?

A. Yes, sir. The proposition to employ telephone circuits in this manner was an old one. It was proposed about 1884 by our present Chief Engineer, Colonel Carty. Under favorable conditions, it was possible to get some results, but for many years no practical use was made of the phantom principle. In fact, it was scarcely more than an interesting scientific curiosity.

Q. Has the Southwestern Telephone Company a great many of

those phantom circuits in the State of Texas?

A. Yes, sir, I understand they have about twenty thousand miles. I think it is only fair to state here that that is a development that pertains entirely to the toll line plant of the Company.

Q. The local exchange has to have long distance service?

A. Yes, sir.

Q. Mr. Rhodes—will you tell us something about the development of the duplex cable? Describe briefly what you mean by

"duplex cable."

A. The subject of duplex cable is closely related to this 434 question of phantom circuits that I have just been describing. for the reason that in the duplex cable the phantom principle is applied to the wires and not the cable in the same way that in my previous description it was applied to the open wires and cross arms. principal application is where phantom open wire lines enter cities through cables. Before the duplex cable was developed, it was necessary to use three pairs of conductors and cable to bring in the three circuits that were carried by two pair conductors, including phantom, on the whole of the line, so that by this principle an additional circuit is superimposed on each two pairs in a cable, and thus the number of circuits is increased fifty per cent without increasing the size or amount of copper in the cable. In developing these duplex cables, many serious and peculiar difficulties were encoun-The structure requires the pairs of wires not only to be twisted together in themselves to prevent cross talk, but special methods of twisting two pairs themselves already twisted together are required in order that overheating may not occur between one phantom circuit and another in the same cable, so that the use of this new type cable, this phantom type at the ends of open wire circuits has permitted the phantoming of open wires under conditions where this would not otherwise have been possible. The sample of duplex cable which I have here is a section that happens to be a sec-

tion from the duplex cable used between Boston and and
Washington but it is the same general method of construction
as is followed in the duplex cables which are used in Houston for

bringing the toll lines into the exchange. Q. Have you a photograph of that?

A. Yes.

Mr. J. D. Frank: We'll introduce this photograph of the Boston-Washington duplex cable as Plaintiff's Exhibit No. 76.

(The photograph was thereupon received in evidence marked "Plaintiff's Exhibit No. 76, Witness Rhodes," and is filed herewith.)

Q. I wish you would please describe what a loaded telephone circuit is and tell us what the work of the Engineering Staff has been in the development of the art of loading?

A. Perhaps the best way to begin to describe the art of loading is to tell what it does. It is a means whereby by placing certain types of coils at proper intervals along a telephone circuit the range over

which you can talk with a common size of wire on pole lines is doubled, and the range over which you can talk over a common size of wire in cable is increased from three to four times; that is, you can talk over 80 miles of No. 19 gauge wire and cable, as well as you could talk over 20 miles of wire and 19 gauge cable not loaded. Now, this device doesn't work like a relay or a repeater to bring in new

energy upon the line but it operates to reduce the losses in the line itself. It makes it a valid conductor for telephone cur-

rents. The principle upon which it operates is difficult and intricate to explain without getting into high mathematics, and I don't think it is necessary to do that.

Q. We probably wouldn't understand you if you did, Mr. Rhodes,

so don't do it.

A. Well, I would rather not. I can show you what the coils are like and then tell you what is really the important thing as to how this development came about and how it progressed. This is one of the typical cable-loading coils. Now, this is a cross section of the same type of coil and I have here the complete coil and a cross section as one drawing.

(By Mr. D. A. Frank:)

Q. You mean you have a picture of it? A. Yes.

Mr. J. D. Frank: We introduce that as Plaintiff's Exhibit No. 77.

(The picture was thereupon received in evidence, marked "Plaintiff's Exhibit No. 77, Witness Rhodes," and is filed herewith.)

A. (Continuing:) Now, this coil consists first of all of a doughnut shaped core. Though at first sight it might appear as though that core was of solid metal, it is actually made up of about 70,000 turns of wire, which is about four thousandths of an inch in diameter, and I have here the wire core of this coil. I have here also, on the same drawing a spool of the wire on which the core was wound.

437 Mr. J. D. Frank: Let's introduce that picture in evidence as Plaintiff's Exhibit No. 78.

(The picture was thereupon received in evidence, marked "Plaintiff's Exhibit No. 78, Witness Rhodes," and is filed herewith.)

(By Mr. J. D. Frank:)

Q. How long would that be if that wire were stretched out, Mr. Rhodes?

A. About 10 miles.

Q. About 10 miles. There is about 10 miles of wire then in that coil

A. Now, when this core is completed and you will notice that the wires in the core are purple colored wires, the wire itself is the

natural color of iron. This purple color is due to an insulating material with which the wire is coated, because for magnetic reasons to avoid electrical losses in the core of the coil, each one of these 70,000 turns has to be insulated from the wires alongside of it. When this core is completed, it is wound with the wire which is actually introduced into the telephone line, one winding goes in and out over half of the circumference of the core and the winding which is introduced into the other wire of the circuit goes around and around the core and the other half of its circumference. Those are placed on open wire lines about 8 miles apart and on cable circuits at intervals of from one to two miles, depending upon the character of loading and on the size of the cable conductor.

(By Mr. D. A. Frank:)

438 Q. You put one of these coils to each cable?

A. One to each circuit in the cable.

Q. To each circuit. If you had one of these 2,424 wire cables loaded, you would have 1,212 balls like this?

A. Except that it is not advisable and economical to load heavy conductors with small gauge like that.

Q. What I want to get in the record is that you have-A. (Interrupting.) One for each pair of wires.

A. One for each pair of wires and not one for each cable.

A. Now, the fundamental principle of this art of loading was invented by Dr. Pupin, who was a professor of mathematical physics in Columbia University. His patent described the invention purely in mathematical language. Our staff investigated it at the time and found that it offered the prospect of great economy in the telephone business, and Dr. Pupin's patents were procured by the American Company for the benefit of the Bell system, but after we procured them, all we had was a mathematical idea, the fundamental prin-An enormous amount of work was required to reduce these mathematical ideas to practical form.

Q. You bought the formula?A. Yes.Q. You bought the formula.

A. We practically bought the formula, the mathematical formula.

(By Mr. J. D. Frank:)

Q. Is that also true with reference to a great number of the patents that you have?

A. Well, we don't buy great numbers in mathematical form, but we buy them in a form which requires a great deal of de-439 velopment work to do before they are reduced to practical. Q. Yes, sir.

A. But, in this particular case what we had to use in the telephone plant was something that the construction and maintenance forces could apply to a cable and could maintain and operate and it was necessary to have these completed coils. It required several years' work on the part of a large corp- of some of the most highly

trained men on our staff to produce the coils in the form where they would be commercially practicable. I remember very clearly that in the early days of this development work that it seemed as though there would always be inherent losses, electrical losses in the coils themselves that would largely neutralize the benefits to be obtained from loading, and the overcoming of these losses has been the result of years and years of painstaking work, of slow and patient research. At the time that the work first started, the first wire that we got that was at all suitable to make those cores from cost \$36 a ton, and as the result of a great deal of work the process of manufacturing that wire was improved and finally brought down to 60 cents a pound. The point I wanted to bring out was it wasn't a market article, we had to develop the means of making it, and take it up with the wire manufacturers. Shortly before the war, we had started on some work, the purpose of which was to obtain a cheaper and at the same time more efficient form of core for these loading coils and it turned out that it was very well that we did, because the

dies employed for drawings these very fire wires were made
440 by holes cut in diamonds, and the only dies available for
drawing this wire came from Germany, so that if we hadn't
had this alternative development well under way, I see nothing that
could have happened but that the supply of loading coils to the associated companies would have been cut off, but by concentrating
on this development, we produced this better and cheaper form of

cores

Q. You have a photograph of that, have you?

A. Yes.

Mr. J. D. Frank: We introduce that in evidence as Plaintiff's Exhibit No. 79.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 79, Witness Rhodes," and is filed herewith.)

A. (Continuing:) Now, this core appears to be made up of what appears to be 7 discs of iron or steel laid one on top of each other. The Exhibit picture shows also one of these—a single one of these core rings. Now, as a matter of fact that disc is not made of solid iron or steel, but is made of very minute particles of iron dust. Pure iron is electrolytically deposited and then ground into a very fine powder. Then the particles are coated with a gum so that each one is electrically insulated from the other.

(By Mr. D. A. Frank:)

Q. Each what?

A. Each particle of iron is electrically insulated from the adjoining particles. If you take that disc in your hand and break it, you will see that it is not solid matter.

(By Mr. J. D. Frank:)

Q. Do you mean, Mr. Rhodes, that each particle of iron in this ring is insulated?

A. From all the other particles by being coated with a very fine

solution of gum.

Q. How big is each particle?

A. Well, they are so small that if you take some of that dust in your hand and rub it, it spreads around in the same way that flour does. I never measured the diameter of them, but they are exceedingly, exceedingly fine. Now, it is a peculiarity of this loading coil development, which is characteristic of many subjects, that our general staff takes up, that the first idea, however important it may afterward become, is a rather small portion of the whole development work so that in reducing the idea to practice a very great amount of work has to be done in the details. Since the development work has been in progress, we have developed and covered by patents the whole art of loading, including the toroidal form of cord. The preferred methods of loading phantom circuits, the use of what we term any quality coils in connection with loading to reduce electrical reflection losses at line terminals and there are numerous patents covering the many details in the design and manufacture of both the cord and the coil and the methods of encasing the coils in protecting coverings, altogether the whole art has been developed and covered by patents since the original investigation. I described the benefit to the associated com-

panies from phantom circuits and duplex cables and in connection with this art of loading it is interesting, I think, to know that a long time after loading was developed, it was not possible to load phatom circuits. It was possible to load what we term the two side circuits from which the phatom is composed.

(By Mr. D. A. Frank:)

Q. You haven't described the phantom circuits, have you?

A. You were out of the room. But it wasn't possible to load the phantom itself. Neither was it possible to phantom load the lines, so that the associated companies were face to face with a serious The use of one of these principles prohibited the use of the other. Now, our General Engineering Staff took up this problem and worked on it and finally developed and placed at the disposal of the associated companies coils whereby the great advantages of loading can now be applied to phantom circuits both in open wires and cables, and it is possible not only to load the physical circuits that constitute the phantom, but the phantom itself. The application of loading has not only extended the distance to which a telephone user in Houston can talk but it has resulted in greatly improved service over lines reaching some of the less distant places. The saving which has resulted from loading in the plants of all of the associated companies amounts to a total of over \$135,000,000.00. Now, I think I should qualify that figure to this

extent: That is what it would cost to provide non-loaded circuits of necessary large gauge of copper wires to give the same transmission efficiency over the same distance that is now obtained with these loading circuits. I don't think that sum of money has been actually saved because what would have happened if we hadn't had this art of loading is that these very large gauge copper circuits would not have been placed and we would never had transmission over the distances that we have now. But if it had been sought to have produced the transmission over the same dis-

tance, it would have required that expenditure for larger service.

Q. Now, what has been done in the matter of developing repeaters

or amplifiers for speech transmission?

A. In addition to this development of the art of loading, which operates to increase the transmission efficiency of the wires themselves, our General Staff for many years has been conducting exhaustive studies to extend still further the range through which it is possible to transmit speech by means of amplifiers which operate to take the weakened telephone current at the end of a line and apply new energy to it, and send it on its way with the same wave shape that it had before and with renewed energy.

I think that it would help in explaining that, and perhaps help in explaining some of the other things, that I will talk about, to just say a word on the nature of the telephone current. When one speaks as in this room his voice sends out waves of condensations and rarefactions in the atmosphere. Thus waves in the case of a

telephone conversation impinge on the diaphragm of the telephone transmitter and by acting on a carbon button transform these acoustic waves of the air into electrical waves of the same frequency, the same number per second, and the same shape as the sound waves in the air. It is possible to photograph these electrical sound waves in this way, by making use of a very all coil of wire which carries a mirror and introducing that coil in the electrical circuit in such a way as the strength of the current increases the coil is slightly moved. Then by transmitting a ray of light from a lamp to this mirror and reflecting it back on a photographic film, the strength of the current is shown by the amount which that little spot of light will move up or down, depending on the motion of the coil, which varies with the strength of the current. Now, if that was all that happened, why this little film of light would simply move up and down in a straight line as the strength of the current varied, but if the film of light horizontally moved at the rate of four or five feet per second why each one of these fluctuations in the strength of the current will appear as a wave on the photographic film as it is developed and I have some photographs of the electric current produced by spoken words.

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 80.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 80, Witness Rhodes," and is filed herewith.)

445 A. (continued). Now, the loudness of a sound depends on the amplitude of vibration of these waves, that is, for a loud sound these waves cover a greater vertical distance on the diaphragm than they do for a weak sound where the distance covered is The pitch of the sound depends on the number of these vibrations that occur in a given period of time, as a second, and that which distinguishes the quality of one's voice. Two people may speak with the same loudness and with the same pitch and yet their voices are different, they have a difference of quality and that which distinguishes the quality is the shape of the wave itself. the problem of the repeater was to take a telephone conversation at the end of a line where the energy had been greatly reduced and send it out with renewed strength with waves of a greater amplitude but the same number of waves and exactly the same shape, that is, the transmitted wave must have all of these peculiar little oscillations that are shown in the wave at the incoming end. Now, that has been done by a devide which was known as a repeater. first repeaters made were of a mechanical type where the receiver was connected to a transmitter and the receiver spoke into this transmitter and sent the vibrations along, but that wasn't a particularly effective form. A form which employs a vacuum type is the type of a repeater which is the most effective.

Q. You have a photograph of that, Mr. Rhodes? A. Yes.

446 Mr. J. D. Frank: We will offer that as Plaintiff's Exhibit No. 81.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 81, Witness Rhodes," and is filed herewith.)

A. (Continuing:) Now, that bulb itself is only a small portion of what is known as a repeater set, and what actually happens, is this: The bulb contains in the center a film, which is heated by current from a battery. It contains a grid of exceedingly fine wires on each side of the film and a place on the outside, and by means of a control which the incoming current passing through the grid exercises it is possible to control the flow of current through the vacuum in that shape and send out the current with renewed strength. In developing those repeaters, it was necessary instantly to develop a special type of mercury air pump to exhaust those bulbs to a billionth of an atmosphere. They are exhausted to a very considerably higher vacuum than obtains in the ordinary electric light Now, I don't think it is necessary to go into the theories of the operation of this repeater but to simply say that it is the element which has made it possible to talk across the United States and to talk from Houston to other cities over the entire United States. think the important thing to bear in mind is that our solution of this problem of talking over very great distances differs from the solution that was proposed by a number of European scientists

as well as by a number of American inventors. The method 447 of these people to secure very long telephone transmission was by means of special highly ingenious and complicated loudspeaking transmitters. We made a very careful study of the situation and concluded that the problem of telephony across the country would not be solved in that manner, but rather through devices of this kind improving the efficiency of the trunk lines themselves. This method we have adopted and worked out and it has met with complete success, so that subscribers in Houston can now talk over the entire United States, and the important thing is that this has been accomplished without any expense or change being required in the plant of the Southwestern Company in Houston for new construction and without changing even a wire or any piece of apparatus in the subscriber's station, or in the subscriber's cables or in the local switch-If the results had been accomplished by these loud-speaking transmitters, it would have been necessary to have equipped each subscriber's station with this different type of transmitter, to have replaced new cables, because the existing type of cables would not stand the loud talking produced by these transmitters and the switchboards would have to be rebuilt; but all of that reconstruction has been avoided, and at no expense to the local company it is now possible for these telephone subscribers to talk throughout the United States.

Q. Is the General Engineering Staff also working on wireless

telephony?

Mr. D. A. Frank: Just before you pass to wireless telephony, I would like to ask him a question or two about this bulb.

(By Mr. D. A. Frank:)

Q. As I understand it, that bulb there has two circuits in it, hasn't it?

A. Yes

Q. One of the circuits come-, say, from the east and the other goes towards the west from that point?

A. Yes.

Q. But they don't actually touch each other?

A. No, the current flows by means of what are called electrons

through the vacuum.

Q. Through the vacuum. Now, this bulb that you have there appears to an ordinary observer to be like a light bulb which you can buy for thirty or forty cents. Have you any idea what it costs to buy one of these bulbs where you are making them wholesale like you are doing now?

A. Why, they cost somewhere in the neighborhood of Fifteen or

Twenty Dollars.

Q. Just for the bulbs and that is just a small part.

A. That is just a small part of the whole equipment, of course.

Q. Of course, that figure that you mention is the manufacturing

cost without any development cost. Enormous sums of money have

been required to develop these bulbs, but the bulbs themselves actually cost over Fifteen Dollars, just to manufacture them?

A. They cost over that, yes.
Q. I thought that would be interesting to know. It impressed me when I first heard of it.

A. Why, in that connection, it has always been rather dif-449 ficult for me to picture what a vacuum of a billionth of atmosphere would-

Q. (Interrupting.) Did you say "billionth?" I thought you

said "millionth."

A. No, I said billionth. And the best picture I could say was if you take away every inhabitant of the United States but the last man and then take away nine-tenths of him, the number that was left would be a billionth of the original population.

Q. That is very impressive, Mr. Rhodes.

A. Now, in connection with this development of the repeater, in working out the wire problems connected with it, our engineers recognized that they have developed certain scientific facts, methods and devices that might, if further worked out, successfully solve the problem of wireless telephony. So we directed our work to this problem with the result, which we demonstrated conclusively in 1915 when we transmitted speech from Washington to San Francisco by radio methods, and also from Washington to Hawaii on one end and from Washington to Paris on the other.

Q. By "radio methods," you mean wireless?

A. Yes.

Q. Wireless telephony?

A. Wireless telephony. The problem of getting the wire and wireless systems together has been solved so that a person speaking at the end of a wire to a standard Bell telephone has talked over the wire hundreds and hundreds of miles and at the other end

450 of the wire has been connected with this wireless station equipped with this system that we have devised, so that by means of the wireless you can talk across the ocean to a moving ship I think it is not too much to hope that this system will find commercial application so that it will be possible for a subscriber in Houston to communicate with a vessel that had left the Port of Houston and might be a hundred or two hundred miles out in the Gulf.

Q. That has been done, hasn't it?

A. That has been done. We have conducted a demonstration for the Navy Department where the Secretary of the Navy himself from his desk in Washington conversed with the commanding officer of a battleship that was between one and two hundred miles off the coast and there was a rather pleasant incident in connection with that demonstration that in the evening we fixed it up so that the apparatus was connected to the circuit leading to the apartment of this naval officer and while he was in the storm at sea, he was enabled to talk with his wife in her apartment at Washington.

Judge Powell: Wasn't it Marconi that said in Rome recently that he believed by the end of this year we would have wireless telephony everywhere? I read in an Associated Press Dispatch that it was in Rome that he said that before the end of the year he thought it would be common everywhere.

(By Mr. J. D. Frank:)

Q. Does the General Engineering Staff Mr. Rhodes, really work for the associated companies in connection with fundamental plans?

A. Yes.

Q. I wish you would take that up and explain it, please sir.

A. In order to give a fair idea of my work generally, I think it will be necessary to describe briefly, first, what a fundamental plan is, and next, the necessity for it, and then how it is made and what the General Engineering Staff does in connection with the subject. Now, as to what a fundamental plan is: It is a map showing what the general lay-out of the telephone plant placed in a city is expected to be at some definite time, from 15 to 20 years in the future. It shows the number of central office districts that will be required at this future time to perform the service most advantageously. It shows the boundaries of these central office districts. It shows the proper location for the central office in each district to enable the service to be given with the minimum amount of cable plant. shows the number of subscribers' lines to be served by each of these central offices. It shows the proper streets and alleys in which to build underground conduits in order to result in a comprehensive, consistent and most economical distributing system, reaching every city block that is to be served by underground cable and finally it shows the most economical number of ducts to provide in each conduit run when that conduit run is built. The fundamental plan is therefore a guide to the management of the associated company when they have to provide any of the principal, important

452 and expensive elements of plants, such as buildings and central office switch-boards and conduit runs to the end that these shall be of the proper size and at the proper location in order to serve the telephone requirements of the city with the greatest economy. Now, the necessity for a fundamental plan arises from the fact that the normal condition of a telephone system is one of continual growth. Usually the number of stations and the amount of telephone traffic grow faster than the population. In building a telephone system for a city like Houston, it will be impracticable and uneconomical to limit the construction exactly to the present day For example, if in order to serve a particular section of the city the company must now place underground conduits, it would be a mistake to provide only the exact number of ducts required at the present time, assuming that there was any future growth expected in that section. Now, the most economical number of ducts to install in a given location is an important engineering problem. If, for example, you required one cable at the time this underground conduit was built and you put down one duct this year and another one next year and another one the year after, and so on, why, you

would be wasting money, due to reexcavating and repaving the street

every year. On the other hand, if instead of adding one at time, year by year, you will say I will put down now enough ducts to last for 100 years, and then I will never have to reexcavate and repave the street, now assuming that anybody could estimate with

453 any degree of accuracy for as long a period ahead as that, why that proposition would involve a waste of a different kind, because interest and the annual charges would more than offset the saving that you would make by avoiding the more frequent taking up and repaying of the streets. Now, somewhere between those limits, one duct each year or enough for 100 years, there is a point for which it is most economical to build when you place the Under average conditions, it works out best to build conduits for about 15 or 20 years ahead. Now, there is a similar problem in regard to building for telephone buildings themselves, in regard to spare capacity provided, and there is a similar problem in The management of a telephone company can't act switchboards. to the best advantage unless all the factors which pertain to grown in a community are carefully studied. The alternative would be to make an off-hand guess, maybe tell a construction foreman to go out and build a conduit and he might stand at the street corner and say I guess I will put down six ducts. Now, he isn't going to get as good an answer as will be obtained if a careful study is made. forecast is better than a rough guess. The estimate, however, is always necessarily surrounded by uncertainty, and the fact that an estimate of this kind had to be made constitutes a serious business hazard that the telephone company can't avoid, and the only way to minimize this hazard is to make these forecasts on the best possible engineering basis, utilizing all of the experience of years in study-

ing the question of telephone growth. Now, as to the third 454 point, as to how these fundamental plans are made: There is first made, as the basis for a fundamental plan what is called a commercial survey, which is a forecast of the expected future of the community showing the amount and distribution and character of the expected future population, the business firms and the telephone users generally. Before making a forecast of this kind, it is important to know what are the present conditions of population and telephone development. Now, to ascertain this, there is made what is called a "pulse count" or a census from the telephone point The present telephone users are classified into residence telephones, business telephones in the residential area and telephones in the business section. In analyzing the residence telephones, all the families in the City are divided among those occupying private residences, and family houses, apartments and lodging houses, and in each class subdivisions are made according to the rent paid. found that the class of telephone service varies rather consistently with the amount of rent that the householder pays. The present percentage of telephone users in each of these classes is ascertained as well as the character of these services. The same analysis is made of the business telephones. They are divided into offices, retail stores, both large and small, groceries and markets, drug stores, wholesale establishments, manufacturing establishments, large and

small, places of amusement, lodge, society and small club rooms. garages, fire and police stations, storage warehouses, railroad 455 stations and yards, car barns and power houses, government buildings, religious institutions, educational inds-itutions. hospitals, homes and sanitariums, and so on, through a long list, and by general experience it is known what those classes of occupants take in the way of telephone service. The same thing is followed in regard to the business center of the city, in regard to de-partment stores, hotels and office buildings. Now, from all that in-formation, careful forecasts are made as to what the expected use of the telephone will be. Each city requires a special study as there are not any uniform rules or formulas that can be substituted for judgment and experience in making these forecasts. It works out that each city has its own reasons for its past growth and each will have certain peculiar reasons governing its future growth. very important factor in the forecast is the future population of the City as a whole and by sections, and in this part of the work the experts who are given to this particular problem on our general staff are those who are constantly studying the growth of all cities in the United States and whose point of view is based on nation-wide ex-This involves proper and detailed comparisons with the growth of the history of other cities where conditions have been such that the experience in these places is useful in making the prediction for the City in question. Then, after that is done, further engineering work consists in applying proper engineering practices and costs that a large part of the telephone plant are op-

erating, so that all of the points of future offices and dis-456 tances are laid out on the map and the costs are figured over a period of years and the arrangement of offices upon the basis of districts and the number of districts are carefully worked out so as to give the most economical arrangement, all things considered, over a period of years in the future. Now, what the General Staff does on that work is this: It keeps the associated companies' engineers posted by means of bulletins and letters and personal trips of our men around the associated company-s' territory, we keep them posted as to the best methods for making these development studies and Whenever we are requested by an associated fundamental plans. company, we send our experts on the ground to col-aborate with the associated company's engineers in making fundamental plans. And this is usually the case in the larger places and in the more complicated and difficult situations. It is the fundamental work that we have done that enables us to say which is the most economical period to look ahead in making the provisions for the plant. Our experts on fundamental plans who have had an experience ranging over the whole United States studying questions of growth are at all times available for advice by the engineers of the associated companies.

Q. Have they ever been used here at Houston?

A. Yes. I planned to mention that in connection with some of the specific work.

Q. That is all right. You needn't take it up out of order if you intend to take it up at some other specific place.

A. Very well. When our General Staff Engineers cooperate in field work, our experts take part in the house count work and in the population estimates, conferring with the officials of the associated companies. Our people supply information as to the growth of the conditions in other cities and furnish a great deal of valuable information as to the result of development of the cities and fundamental plans that have been worked out in other places.

Q. Now, when those men come to Texas to work on these fundamental plans, is there any extra charge made to the Southwestern

Tel. & Tel. Co. on that account?

A. No, their expense—their salary and travelling expenses and their living expenses while they are here are all paid by the General Staff.

Q. That is by the American Tel. & Tel. Co.?

A. Yes. Before leaving that subject of fundamental plans I would like to say that while it is not possible to estimate the loss which would occur in the course of time if a company proceeded to build its plant without a trustworthy fundamental plan, it is clear that a saving of only a small per cent of the expenditure involved in the work which is covered by the fundamental plan would be a very substantial matter to an associated company.

(By Mr. D. A. Frank:)

Q. Suppose this building had been located at the wrong place by say 400 feet, would that have added to the cost of putting in the plant here?

A. Yes, it would add 400 feet to all the cables coming from one direction. It is not so much a matter of 400 feet as it is a matter,—very often in the absence of a fundamental plan it might be possible that an office would be a half a mile out

of the proper position, it might be as serious as that.

Q. I believe in St. Louis we had one office that was located something like half a mile out of the right place and that was without a fundamental plan before the Bell Co. got in charge of the plant there and it was decided to give up the building entirely and build an entirely new building, because it was more economical to build a new building and establish the plant at the right place than it was to maintain it at a place that was entirely beyond the wire center. You may remember that?

A. I remember it.

Mr. D. A. Frank: The building had to be sold at a great sacrifice because it couldn't be used for anything except telephone purposes.

(By Mr. J. D. Frank:)

Q. Now, take up and describe some of the benefits of the General Staff, dealing with the standardization of materials, apparatus and methods?

A. I think perhaps the best picture that can be given of the bene-

fits of standardization is first of all to look at what has happened in the absence of standardization. In the telephone system in Paris, France, the subscribers buy their telephone instruments from manufacturers. The French Administration has approved about 150 types of instruments which are made by about 25 different manufacturers. All the manufacturers have done their best to get

new types of instruments approved and to sell them to sub-From time to time, manufacturers there have discontinued making certain types of instruments, sometimes because it didn't pay to make them any longer and sometimes the manufacturer failed and went out of business and that put the subscriber in a bad position because he couldn't get any more parts for re-The instruments in Paris are installed by Government inplacing. The Government operates the telephone system. scriber buys his instruments and the Government maintains them. They have found it very difficult to familiarize the inspectors with 150 different types and it is difficult to carry all the parts that are necessary for repairs. Now, when the subscriber has some difficulty with his service, he reports it to the telephone administration and in the course of time they send a man to his premises to make an inspection. This man often reports that the difficulty is not with the Government telephone lines at all but it is with the subscriber's instrument and sometimes they try to correct the fault; if they don't succeed, he tells the subscriber that he has a bad set and they better take it up with the manufacturer that sold it to him. So the subscriber, he says, your set you sold me at such and such a time is defective. So the manufacturer sends a man out to make an inspection and he finds it isn't the instrument at all, it is the government wire, and that sort of difficulty has passed back and

forth a great many times, with the result that it has been a great loss to the subscriber and inconvenience to other subscribers that wish to connect with him. With the number of different types of instruments they have, it has been impossible to establish. It very often happens that conversation with one subscriber is very good and very often it is very poor. Now, in the Bell System in the United States, we proceed on the basis that standardization to give uniform apparatus and uniform methods are desirable in all places where conditions would permit. Standardization has many advantages. For one thing, it makes the best available for all. It renders available enormous supplies of material and labor in emer-What I mean by that is, that if there is a flood or a fire that wipes out a large amount of telephone plant that material from another section of the country's territory, or material that was destined for quite a different telephone company can be brought in and Also, men can be brought in from anwill fit in with the plant. other company and the materials and methods which they are working with will be the same as those which they were accustomed to at home. Standardization reduces cost because when all companies use the same thing, it can be made in the largest quantities. Standardization also reduces cost of stocks of material and the cost of maintenance and repairs because fewer parts have to be carried. Instead of having to carry parts for a dozen types of the same thing, it is only necessary to carry parts for one type. It reduces the cost of instruction of employees because there are fewer things

to get acquainted with. It reduces the cost of plant accounting and keeping track of the amounts of materials used. it can be said that the benefits of standardization go generally through the whole business. Now, in the Bell System in the United States, unless the General Staff existed to recommend standards, there would be a multiplicity of types for each of the thousands of pieces of apparatus comprising the telephone plant and the result would not be the same. I feel certain, in methods of operating, which would lead to a lack of efficiency and economy in many ways. Now, there is another benefit of standardization in that it makes our development work of new apparatus more feasible. What I mean by that is this, if every piece of apparatus differed from every other, there would be no tangible point of departure from which to start with something new, but if all the companies are using the same type of apparatus and it is possible to devise an attachment for it that would make an improvement, that attachment is attached to all of that type of apparatus. We don't have merely one standard for each thing and try arbitrarily to force the business into that mould, but we do have as many different standards as varying conditions require and we change our standards, the standards that we recommend whenever it is an advantage to the associated companies to do so. I think that we clearly recognize the fact that special conditions may justify a departure from any of these standards and in fact we give

a great deal of consulting advice to the associated companies on points where it may be well to diverge from any previous

standard to meet special conditions. Our staff has been doing this work of standardization for the Bell System for a great many Now, if it wasn't done for all of the associated companies together, each associated company would require a separate staff for standardization purposes and that would be a duplication around the whole country. There is going into the plants of the associated companies in a normal year about Seventy-five Million Dollars of materials, including central office and sub-station equipment, lead covered cable and other miscellaneous materials, just in material, well on an average in the whole system about Seventy-five Million Dollars' worth of material a year, to which the benefits of standardization apply. Now, it is impossible to say how much standardiza-It has been variously estimated, but if it only saved two tion saves. per cent of the cost of that material, it would amount to a Million and a half dollars saved to the entire system. Now, of course, in addition to that is all the saving that comes about from standardization in construction, maintenance and operating methods.

Q. What has been done by the general engineering staff on the

subject of switch-board development?

A. I think in introducing this subject that it is interesting to form a picture of what the telephone art in relation to switchboards was in the early days. In an 1879 telephone directory, the subscriber was

informed that all calls were ticketed and if the called subscriber didn't answer promptly, he was advised to wait 15 463 minutes before repeating his call.

Q. That is on local calls?

A. Yes, local calls.

(By Mr. D. A. Frank:)

Q. Fifteen minutes or fifteen seconds?

A. Fifteen seconds.

(By Mr. J. D. Frank:)

Q. They made out a ticket or each local call?

A. Yes, that was in the early days. Now, one step in the development of the switch-board, the step that brought in the so-called multiple board, saved on an average about ten cents on each call. Under present conditions that saving amounts to the equivalent of about three thousand years of subscribers' time saved in the United States.

(By Mr. D. A. Frank:)

Q. Just right there, Mr. Rhodes, what is about the average time on the local call, how do you arrive at this saving?

A. Why, that is b. ed on the previous operating practice before

the multiple board was introduced.

Q. But you gave us a statement there that at one time they had been warned to wait 15 minutes before repeating the call?

A. That was, if his call had not been answered.

Q. But, Mr. Rhodes, some of us don't understand about how long You don't mean to say now you have to it takes to get a local call. wait 15 minutes to get a local call?

A. No, I hope not.

Q. What would you consider from fairly good service for a cal- in the main exchange?

464 A. Why, I presume you get most of them in about four or five minutes.

Q. That is what I wanted to get in the record. It sounded like you were saying cutting down the time from 15 minutes.

A. No, I didn't intend to give that impression.

The first switchboards that were used were based on telegraph practice and one of the first switchboards provided for as many as The modern switchboard provides for approximately I won't take the time to go through the early historical de-10,000. velopment, but one of the very important steps was the development of the common battery switchboard in which the subscriber signals the central office by taking his telephone from the hook, and in which the condition of the call is made manifest to the operator by little electric lamps in the switchboard. In the early switchboard the signals were given by means of or drops which fell when the subscriber turned the crank of a hand generator. Those drops were followed by others which were raised automatically when the subscribed inserted a plug in the jack of the calling subscriber's line. The disconnected signals in the other boards were simply drops which were operated mechanically. The whole tendency in the switch-board development has been to render the operations of the switch-board more and more automatic, so that the step in the development from the so-called manually operated board to a type of board where the number of operators is reduced to a minimum and the subscriber makes his call by means of a dial is not in itself

465 an abrupt step in switch-board development but is the result of an evolution which has been going on for a great many years rendering the switch-boards more and more ne-rely automatic. Up to recently, it had not been found that there was any existing automatic system that we considered satisfactory in all respects in meeting the requirements necessary in our service to the public. There has been no concensus of opinion among engineers and manufacturers in favor of any one system. One switchboard manufacturer has advocated manually operated equipment; another one has advocated what is known as semi-automatic type of equipment, in which the subscriber gives his call to the operator in the same way that he does the manually operated system and the operator completes the call automatically; another company has advocated the full automatic system. A great many years ago, 12 or 15 years ago, we started intensively our development work on an automatic and semi-automatic switchboards and in the course of that time we have secured patent rights to all existing forms of automatic and semi-automatic switchboards offering any promise. When our development work had advanced to a point where practical field trials were needed, about five years ago, we installed two complete installations of automatic switchboard of several thousand lines each in service in Newark, New Jersey, where they have been under constant observation by our experts and have settled a great number of points that could not have been settled in any other way without

466 these large experimental installations. All that experimental cost has been, I might mention, borne by the American Telephone & Telegraph Co. We have reached the point where we are manufacturing automatic apparatus on a large scale and we have arranged with another large switchboard manufacturer to manufacture equipment, automatic equipment, extensively. It is being built as fast as factories can be erected and the special tools to produce it can be manufactured, and automatic equipment in the course of the next ten years will probably displace manual equipment very generally throughout the Bell System. At first, it will be used for growth in the system and to displace existing manual equipments where the conditions are such that by reason of the existing manual equipments being outgrown, that expensive and extensive changes will be required. It is going to be introduced as rapidly as practicable.

Now, in connection with the subject of switchboards there is one rather small point that is interesting as showing what the savings are. I am referring to the matter of connecting cords which are used before each operator's position. The A operators or subscribers'

operators have usually 17 pairs of these cords, each pair ending in a plug, which are used to complete connections in the multiple switchboard. At the incoming trunk switchboards, the B operators usually have 25 sets of single cords in which the trunks terminate. Now, the development work that we have done on these cords alone has

increased their life to fully six times what it was before this development work was carried out and that saving alone in cords in the Bell System amounts to more than Four Million Dollars a year.

Q. How long did those cords last before they were improved, that

is, in point of time?

A. Why, they lasted something like three or four months.

Q. How long in point of time?

A. And it was increased about two years.

Judge Powell: What cords are those?

Mr. J. D. Frank: That's the cords that the operators use at the switchboards.

A. (Continuing:) In much of the apparatus that is used in the telephone plant, there are delicate contacts through which the telephone current passes. Those contacts have to be made of expensive and very rare metals. They occur in the relays and in the keys. Platinum for many years was largely used for that purpose. At the present time platinum costs considerably over \$100.00 an ounce; only a few years ago it cost not more than 20 cents an ounce.

Q. Mr. Kelsey said it costs from ten dollars to twenty dollars an

ounce.

A. Well, I don't remember that it was ever as low as \$10.00, but it isn't now, There is now expended in the Bell System for these rare contact metals over \$100.00 every year for additions to the plant. In many of these contacts, we are employing substitutes which are made of less expensive metals. Now, the improve-

468 ment in those substitutes which are effective has required a great deal of testing, has required making machines in which contacts were closed millions of times and counted and the resistance of the contacts carefully measured to determine how they change with age. As the result of the use which we have been able to make of some of the substitute metals, it is a fact that if we had employed platinum entirely for these contacts instead of spending as we do now about a million dollars a year for these precious metals, we would have been spending over two and a half million dollars a year. So, there has thus been a saving of a million and a half dollars from The prices of many of these metals have gone up so that it is characteristic of this development, as it is of some others in our plant, that the work that we have done has prevented the cost of apparatus from rising to anything like the degree that would have been the case if these developments had not been made. There is another point that I would like to mention in that development, if it is not Can you run on a little further?

The Master: Yes, sir.

A. (Continuing:) One of the typical pieces of apparatus in the switch-board is what is known as line and cut-off relay. One of these pieces is associated with every subscriber's line in the common battery board.

469 Q. Have you a photograph of that? A. I have a photograph of that.

Mr. J. D. Frank: I will offer that as Plaintiff's Exhibit No. 82.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 82, Witness Rhodes," and is filed herewith.)

A. (Continuing:) I have here the new type of line cut-off relay and pictures of those.

Mr. J. D. Frank: We offer the picture as Plaintiff's Exhibit No. 83.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 83, Witness Rhodes," and is filed herewith.)

A. (continued). Now, the line relay operates when the subscriber removes his telephone from the hook to close the contact and light a lamp which attracts the operator's attention. The cut-off relay operates when the operator inserts a plug into the jack and causes the line lamp to be extinguished. Those two relays of the early type were used prior to about 1912; they were standard relays for that purpose; they are mounted on racks, one strip above another, and there may be 10,000 of them in a large office. They are a very im-

portant part of the central office equipment. Now, that new 470 relay of the flat type, which takes its place, is quite a different structure. It is not only smaller and more satisfactory in operation, but it costs about 25% less than the type that was used before. I mention this development because it is characteristic of one place of our development work. The original idea of this new type of relay arose in the mind of a man in the Western Electric Company, the manufacturing branch. As soon as that idea could be reduced to definite form, it was talked over with our engineers of the General Staff. We considered whether a relay of that design would be an advantage to the associated companies. If it was, we wanted to take it up, develop it, and recommend it as standard; otherwise, not. We recognized that it was a promising suggestion and we directed the Western Electric Company to proceed with the mechanical development of that relay. From then on, we kept closely in touch at all times with them so that the knowledge and experience of our apparatus experts, from an operating standpoint, would be incorporated equally with their experience as designing and manufacturing engineers in producing a new relay.

Now, when the new relay was developed so that the mechanical experts were satisfied with it, we took a considerable number of those relays and made tests of them, causing them to operate hundreds of thousands of times and equipping them with counters to count the number of times that they operated and we found that that type of

relay as developed possessed a defect which if it had been placed in service would at the end of a short time have begun 471 to increase the maintenance expense to the associated companies very considerably and would eventually have resulted either in a continued high maintenance on the piece of apparatus or have caused removing it and substituting something else for it, so that instead of improving that piece of apparatus as it then stood, we took it up further with the designing engineers and pointed out what was wrong and went out with them and improved it. They worked along the lines that we indicated and the lines that we suggested from time to time and came back with another form of it, which is this form that you see here, and that was put through a very rigid series of tests and it was found that it was very satisfactory and gave superior satisfaction to the type of relay that had been used before and it immediately begun to save the associated companies one hundred thousand dollars a year in the first cost of relays that they were adding to their plant.

Q. Did you have any other exhibits with reference to that?

A. I don't think it is necessary to show them. I had some strips of these relays if you think it would be interesting.

Q. Mr. Rhodes, will you give some account of the development of

the substation apparatus?

A. There is so much ground to be covered I will be very brief, if you will allow me, on that subject, and simply say there is a large amount of work constantly going on dealing with improvement of substation apparatus and methods of connecting and install-

472 ing it. That work has been crystallized in a series of handbooks dealing with substation apparatus, the method of installing it, the circuits and connections used in substation wiring, and the adjustment of substation apparatus. I have seven of these typical handbooks, if you wish to introduce copies as exhibits.

Q. These are designated as Specification No. 3851, etc.?

A. Yes, sir.

Mr. J. D. Frank: We offer Specification No. 3851 in evidence as Plaintiff's Exhibit No. 84.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 84, as requested.)

Mr. J. D. Frank: We offer Specification No. 3852 in evidence as Plaintiff's Exhibit No. 85.

(Thereupon said exhibit was received in evidence, and marked as Plaintiff's Exhibit No. 85, as requested.)

Mr. J. D. Frank: We offer Specification No. 3853 in evidence as Plaintiff's Exhibit No. 86.

(Thereupon said exhibit was received in evidence, and marked as Plaintiff's Exhibit No. 86, as requested.)

Mr. J. D. Frank: We offer Specification No. 3854 in evidence as Plaintiff's Exhibit No. 87.

(Thereupon said exhibit was received in evidence, and 473 marked Plaintiff's Exhibit No. 87.)

Mr. J. D. Frank: We offer Specification No. 3855 in evidence as Plaintiff's Exhibit No. 88.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 88, as requested.)

Mr. J. D. Frank: We offer Specification No. 3856 in evidence as Plaintiff's Exhibit No. 89.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 89, as requested.)

Mr. J. D. Frank: We offer Specification No. 3857 in evidence as Plaintiff's Exhibit No. 90.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 90.)

Q. What did you say these bulletins are, Mr. Rhodes?

A. They cover the approved modern standards with regard to substation apparatus, and the methods of installing wiring and connecting it for substation apparatus; maintaining apparatus and circuits at the premises of the telephone user.

Q. Those are sent out to the Associated Companies for use in the

installing of apparatus, are they?

A. Yes; placed in the hands of the substations installed.

Q. Is that all you had to say on the development of substation apparatus?

A. Yes, sir.

474 Q. What is the General Engineering Staff doing with ref-

erence to building plans, if anything?

A. There used to be a time when telephone switchboards were small and light and could be put in almost any kind of building; the telephone company could go out and lease quarters anywhere and put the equipment in any old building, but that was a good many years ago. Now at least the more important telephone buildings are designed with reference to the building fitting the equipment

rather than forcing the equipment to fit the building.

In connection with this matter the General Engineering Staff has given a great deal of thought and investigation, and has made a great many studies of the best arrangement of apparatus within buildings, and the best arrangement of the buildings themselves. There is a matter of arranging the buildings so that they may be economically extended at a later date. As the central office equipment grows, additional building space is required, and under a great many conditions it is more economical to build the building small at first and put in part of the equipment, and arrange all the equipment to grow toward the back of the building, and later remove the wall of the building and add to it so the equipment can go into it without expensive changes and rearrangement.

Among the features that have been taken into account in designing buildings and the arrangement of equipment so that it may be conveniently operated and maintained, and so that the light-

ing and supply of air are satisfactory, the matter of floor 475 strength has to be considered; also the problem of minimizing the fire hazard, both from external and internal sources; consideration is also given to the safety of employees in case of fire, and attention is given to future expected changes in the type and weights of apparatus, and such problems as how best to bring in the cables from the underground system to the main distributing frame, and the arrangement of the cable between apparatus. What we have tried to do is to develop various typical floor plan arrangements of buildings by means of which the Associated Companies may be able to easily determine what size, shape and arrangement of buildings, and the arrangement of the equipment within the building, would be best for them to employ in a specific case, without themselves going over all of the details to work it out for each specific case. These plans that we furnish the Associated Companies deal with the building as an equipment proposition, and not as an architectural proposition. The Associated Companies employ a local architect, as a rule, for their buildings, but we place in the hands of the Associated Companies, so that they can take up with their architect, these typical floor plans, and also information specifically adapted to telephone buildings furnished them by circular letters. When they build a new office, or have their architect prepare plans for a new building, they have this information to guide them, and to assist them in determining what arrangement they shall make. 476 not necessarily use any one of these specifications exactly, al-

though in a great many cases they do, and frequently consult with the building expert of our General Staff in regard to any question coming up dealing with a particular building, which they may have to erect. The plan of consulting with our engineers is a common one. It is within the judgment of the engineer of the Associated Company whether he should so so, or not. In many cases the engineer of the Associated Companies will ask at the beginning of the building of a plant what we would suggest in the way of floor plans to use space economically for the proper working of the apparatus for his particular situation, and in such a case they may specifically consult our engineer for advice. Sometimes the engineer of the Associated Companies will prepare plans and ask our engineers to comment on the arrangement, which they have made. In other cases they will ask us to suggest floor plans ourselves.

Q. Is there any duplication between the work performed by the engineers of the General Staff and the architect of the local company

in laying out buildings like the Preston building?

A. The work, we do with the telephone company's engineer deals with what might be called specifically the engineering feature, and has to do with producing an economic and convenient arrangement of the apparatus—if I may explain that—we deal with the telephone

business from the standpoint of the building being a factory for producing telephone service, and we deal with the mechanical arrangement of the building, whereas the architect deals

with it from the ordinary building standpoint.

Q. With reference to the service performed by the engineers of the Associated Companies in these building plans, and the service performed by the engineers of the General Staff, is there a duplication there between the two, or are they simply working together for the purpose of getting the best plan they possibly could?

A. They are working together in co-operation, and the engineer of the Associated Companies will leave to us questions upon which he may be in doubt, and upon which he would like to know from

our national experiences would help him.

Q. You are constantly working on these problems throughout the United States, and having questions coming up frequently, and your engineers have broad experience on those lines?

A. That is true.

Q. Is it necessary for a telephone company in constructing a central office building like the Preston building, to take more precaution to guard against fire than would be required in ordinary business?

A. As a rule I think that would be true. We undertake to obtain the greatest possible degree of fire protection not only to guard against interruptions to the telephone service, but to safe-478 guard to the greatest degree possible the liability of the employees in the building; we take all the precaution that can

be thought of in a case of that kind.

Q. You have been through this building here, have you, Mr. Rhodes, and know in a general way, what equipment is stored in the building?

A. In a general way; yes.

Q. If this building and equipment should burn down, it would take something like six months or a year to restore the equipment we had, and put it in working order again?

A. If it were a total loss?

Q. Yes.

A. Yes: I would say it would take nearer a year than six months.

Q. And of course service would be considerably impaired during that length of time?

A. That would affect it to a large percentage, that is, if these build-

ings and the two operating units were wiped out; ves.

Q. That goes to show the necessity and importance of taking the proper precaution to guard against destruction of the property by fire?

A. I think so.

Q. I wish you would please give us a brief description of the work

of the staff on outside plant development.

A. All that I have said with reference to the general 479 methods of development and standardization in other branches of the work applies with equal force to the outside plant, and the materials used in its construction. Our General Engineering Staff maintains a corps of experts who are devoting all their time to the outside plant, which is a peculiarly important part of the telephone plant, on account of the great amount of money now invested in it, and the large annual additions that are required to take care of the growth of the business. If each Associated company built its outside plant without regard to standards carefully developed at the result of engineering studies, there would result a diversity and an economic waste. Such items are involved as the stoutness and foundation of poles, the amount and character of the guying, the design, dimension and strength of each one of the many articles of pole line hardware, such as pole steps, guy strand, guy rods, guy clamps and anchor rods. The designs of each one of the detailed articles entering into the construction of the outside plant on a telephone exchange are all worked out, based on obtaining the proper strength and economic life. The specifications for these various kinds of material are based on careful study, laboratory tests, breaking strength tests made in testing machines,-in many cases artificial aging tests are made, as between different methods of applying galvanism to determine within a short time the relative

ability of different metals, and the process for the resisting

480 corrosion.

In many cases in the strength of guving and strength of poles we make the trial on a full sized specimen of apparatus. Just to illustrate one phase of the work, we have for a great many years devoted careful attention to the preservative treatment of wood. We have made a series of continuous and exhaustive experiments extending over many years. A large volume could be written on this one subject alone, dealing with the character and quality of the preservative materials, details of the impregnating processes, various treatments for different classes of timber, the pole technique and the economics of the entire situation have been carefully studied and the Associated Companies furnished with valuable data and specifications. I might mention that the United States Forestry Service has joined with us in some of this work, to obtain the benefit of our experience and facilities for conducting experimental trials. We have placed many thousands of experimental poles in parts of the country where rotting of timber goes on rapidly, and at intervals of every few years those poles are carefully examined; the earth is excavated away at the ground line and measurement made with great care of the amount of sound wood remaining.

While we are on the subject of poles, for a good many years the price of wooden poles has been rising. While conditions at the present time do not justify the use of a different type of pole, we have anticipated that at sometime a reinforced concrete pole might be

constructed to take the place of the wooden pole. If that time should come, we want to be prepared to advise the Associated

Companies as to the best type of concrete pole to use. A few years ago we constructed about 500 reinforced concrete poles of different designs and set them in various parts of the country, and their behavior under the conditions of the practice is being carefully observed. There has been some doubt as to what will happen,—whether they will be more or less immune to injury from lightning has not been known; furthermore the possible effect of water getting

into minute cracks of the concrete and freezing, thereby injuring the concrete, was not known. We have been following this matter up with the idea that at some future date we want to be in a position to advise the Associated Companies as to the best type of reinforced concrete pole, based on actual experience.

Q. As a matter of testing out these concrete poles you have a fair example of the work of the General Staff in anticipating future

needs of the associated companies?

A. That is what we intend to do in all branches—yes.

Q. And whenever the emergency comes you will be prepared to

assist them immediately?

A. Yes; and we want to be prepared, and have that preparation based as far as possible on facts developed from actual experience rather than resting purely on theoretical investigations.

In what I have just said—I have used poles as an ex-

ample—similar work is done regularly in regard to underground conduits, underground cables, aerial cable, distributing plant, twisted pair wire, and cable terminals. These matters are continuously studied specifically, and all necessary information for constructing the plant is put in the hands of the Associated Companies. We undertake to give them advice as to the best practice, and where it is useful to put this handbook in their hands; we do this in this branch of the work as well as in all others. I

have some of the typical handbooks covering these poles of the exchange outside plant.

Q. This is simply on underground conduit construction?

A. Yes, sir.

Q. And is known as Specification 3613?

A. Yes, sir.

Mr. D. A. Frank: We offer that exhibit in evidence as Plaintiff's Exhibit No. 91.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 91.)

Q. The next pamphlet is on the subject of drop wiring, and is specification 3930?

A. Yes, sir.

Mr. J. D. Frank: We offer that exhibit in evidence as Plaintiff's Exhibit No. 92.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 92, as requested.)

Mr. Rhodes: In connection with that exhibit I would like to say that the few sheets printed on yellow paper at the back includes those methods which I mentioned yesterday as devised to meet special conditions which threatened to grow out of the war, when the supply of ordinary wire that had been used before that time was required for the use of the American Expeditionary Forces.

Q. The next pamphlet is on the subject of underground cable placing, and is Specification 4032?

A. Yes.

Mr. J. D. Frank: We offer that exhibit in evidence as Plaintiff's Exhibit No. 93.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 93, as requested.)

Q. The next one is on aerial cable construction, designated as Specification No. 3929 which we offer as Plaintiff's Exhibit No. 94.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 94.)

Q. The next is on outside cable placing, designated as Spec-484 ification No. 3933, which we offer in evidence as Plaintiff's Exhibit No. 95.

(Thereupon said Exhibit was received in evidence, and marked Plaintiff's Exhibit No. 95, as requested.)

Q. The next one is on the subject of block cable construction, known as Specification No. 3931, which we offer as Plaintiff's Exhibit No. 96.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 96, as requested.)

A. Now before leaving that subject I have one more handbook which illustrates the stroke of another side of the work. This deals with the instructions for administering first aid to employees who may be injured in the conduct of the business. We took this up with competent physicians, and did a large amount of work in arriving at the best first aid instructions.

Q. That is known as Specification No. 4018, and we offer it in

evidence as Plaintiff's Exhibit No. 97.

(Thereupon said exhibit was received in evidence and marked Plaintiff's Exhibit No. 97, as requested.)

Q. Those pamphlets on first aid are placed in the hands of all construction foremen, are they not?

A. That is the general practice of the Associated Companies; they

do that; yes.

485 Q. Mr. Rhodes, is there anything else you want to say on that subject—subject of work of the staff, on outside plant development?

A. I think that is sufficient to give a general picture of the work.

Mr. D. A. Frank: I have a question or two to ask on poles. The testimony in this case shows that the main supply of poles we get for this territory comes from Michigan—white cedar—you might give us your specific knowledge with reference to it. Do you know whether the supply is diminishing?

A. Yes: the supply of wooden poles is diminishing. It takes about 150 years for an average sized cedar pole to grow to suitable size for a pole. That in itself indicates a general tendency toward depletion of the supply. One of the questions we are studying now is what we may expect over the next ten years in regard to the future demands for poles, and the supply, in order that we may know whether we will require substitutes for timber within five, ten or fifteen years, and so direct our experimental work that we will have the result at the required time.

Q. How long does it take a pine tree to grow to be big enough

to be a telephone pole?

A. I do not have that in mind—a chestnut pole, which is used

widely in other parts of the country, takes about 60 years,

Q. I think the pine is close in around that time. There are a great many pines in Eastern Texas and Louisiana, a great forest of small pine trees, is there not? 486

A. Yes; I think so.

Q. Has the General Staff done any work with reference to preparing the pine tree to make poles?

A. No. Of course,-I don't quite get you.

Q. I mean did the General Staff do any work towards fixing the

pine tree so it would last?

A. Oh, yes; this work on preservative treatment I have described applies peculiarly to a yellow pine pole; a yellow pine without treatment is a short life.

Q. Will last only 3 or 4 years?

A. Depending on the condition of moisture and warmth of the climate.

Q. After treatment how long will it last?

A. We have some that have been in service between 25 and 30

Q. They last longer than cedar poles?

A. Yes. I do not know that that would apply in this section of the country, but those I have in mind we have had the longest experience with were in Virginia.

Q. Why haven't you used creosoted pine poles in and around cities more largely than they are used? What objection is there to use -

in a city?

A. For one thing the creosote under conditions of exposure to the sun will soften and become rather messy, and the body of it is

likely to spoil the clothing of one coming in contact with 487

Q. People are likely to get their clothes ruined, and the men climbing the poles will get theirs ruined? A. That is true.

Q. But for a pole in out of the way places and for long distance lines, it is practical to use pine poles?

A. They are used for that purpose.

Q. You do not see any immediate relief by increasing the supply

of cedar poles, do you?

A. No; the supply in Michigan is getting to be rather scarce and most of the poles now are coming from northern Minnesota; there are cedar poles in considerable quantities in Canada, but there is a duty on them which makes the price unusually high.

Q. Is that due to a levy by the United States Government, or an

export duty by Canada?

A. I do not remember which.

Q. The duty is sufficient to keep you from using the Canada poles?

A. My impression is it is about 30 percent.

Mr. J. D. Frank: In connection with these pamphlets you introduced—or handbooks which you introduced in evidence here, is that all the handbooks which you have or is it just some of the books issued by the company—

A. These are only for illustration. We have a considerable number of others which I did not bring down. By the way,

I omitted one that is of interest, which deals with the precautions in the way of separating wires and obtaining clearances in what we term joint use construction, where telephone wires occupy the same poles as electric light wires, in the case of the distributing electric light systems, and employing 2400 volts and less, both primary and secondary, it is advisable to use poles jointly between telephone circuit and electric light circuit, and these specifications cover approved methods of construction in that case.

Q. That is known as Specification No. 3921, replacing Specification No. 2651, which we offer in evidence as Plaintiff's Exhibit No.

98.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 98, as requested.)

Q. Why is it necessary to go to great pains in seeing that those wires are properly strung on the poles where you have electric light wires?

A. In order to safeguard the lives of employees working on the poles and to safeguard lives and property of the telephone users.

Q. There is a question of electrical interference with the operation of telephone lines entering into this work?

A. It is covered in that specification; it covers the method of safe construction. The question of interference is cared for by special methods of transposing the telephone wires.

Q. I wish you would take up and describe the work done by the General Engineering Staff guarding against disturbances in

high tension wires?

A. The question of noise and interference with telephone conversation from neighboring electrical wires and power wires is a very serious and important one, owing to the fact that the telephone is such an exceedingly delicate and sensitive piece of apparatus. The voice currents used in telephone transmission are the smallest and weakest that are used in the electrical art.

Q. About how many volts of electricity pass over the ordinary

telephone circuits?

A. Only comparatively few, but I think the best measure of that is brought about in this way: The energy expended in operating the diaphragm of the telephone receiver in an ordinary conversa-

tion is about one two millionths of the energy expended in an ordinary 16 candle power electric lamp. Furthermore the energy required to create an audible sound in the telephone is only about one one millionth part of that one and two millionths.

Q. You mean that the energy expended in the 16 candle power

lamp would be equal to-

A. Yes, to the energy expended in an ordinary conversation by telephone. Looking at it in another way, it has been calculated that the energy required to vaporize a drop of water would maintain an audible sound in a telephone receiver for about

15,000 years. Now with the introduction of a commercial system of electric lighting, the disturbances on telephone circuits became so great that important work had to be done in order to give commercial telephone service, our General Staff has worked on that problem from the very early days of the business, devising methods of transposing wires, and of arranging methods and testing the wires together in cables to preserve the lines. After any advance that has been made in electric lighting power and relative current transmission has changed and increased the difficulty of maintaining the telephone line quiet, and has required some modification of the telephone system. We have kept a case with these developments in the light and power circuits, and have devised methods for maintaining the telephone circuits quiet. Closely associated with this question of inductive interference, and I would like to make it clear that this interference is due in no way in many cases to the actual leakage of the power current into the telephone wire, but is purely a magnetic action through space, due to the fluctuating light or power current inducing a current into the telephone circuit. Closely associated with this question of maintaining lines guved

has been the question of minimizing the hazard to the telephone subscriber and the telephone client from possible accidental contact with these high tension wires, with the tele-

phone wires.

This problem of protection against high tension currents has been attacked in two ways, one by the development of protective apparatus placed both in the subscriber's station and the central office, and second in the case of protection against the enormously high voltages which are used at the present time for power transmission by developing proper methods and rules for construction where two classes of high tension circuits and the telephone circuit are necessarily brought into proximity, developing construction rules, to make the construction of adequate strength, so as to reduce to a minimum the possibility of actual physical contact between the wires.

As illustrative of the difficulty brought about by some of these power transmission systems, I might mention the case of the electrification of a railroad, where eleven thousand volts single phase alternating current was employed. When this electrified railroad was first placed in operation, it caused violent disturbances on telephone lines in the vicinity,—and by vicinity I mean that lines five miles away were put out of business, a one-line telephone line five miles

from the high tension line. A highly balanced underground cable in a conduit beneath a highway alongside the railroad had voltage induced on its wires sufficient to run an ordinary electric description of the Associated Companies, in whose territory this project had been

installed.

We took the matter under active consideration and applied measures which produced partial relief, enough to enable telephone companies to give service in the vicinity of the railroad, but our first

solution was by no means completed.

We employed experts in the electrification of railways to work with our general staff engineers, and the leading engineer on that kind of work in England was brought over to help us in solving that problem. The final complete solution has involved changes in the electrified system of the railway itself.

This work is now available for all of the Associated Companies, where he may have a similar railway electrification taking place

in his territory.

Q. They also received the assistance and advice of the general staff in connection with the high tension wires used by electric light

companies in this territory?

A. Yes. There was an interesting case in point right there. Several years ago the associated companies operating on the Pacific Coast experienced difficulties due to the noise on its circuits from the presence of high tension transmission wires. The use of these high tension wires was developed to a large extent on the Pacific

Coast before elsewhere in the country. The matter came to 493 the attention of the State Commission, and there threatened

to be a contest between the power transmission companies and the telephone companies. A representative of our general staff who was skilled in this matter from the engineering side went out to the Pacific Coast, and through his efforts a Committee was formed, having on it a representative of the State Commission, the Power Companies and the telephone and telegraph Companies. decided to make a comprehensive study of the whole question of inductive interference and obtain facts that had never been before The telephone part of that work was directed by a rep-We had one of our engineers stationed on resentative of our staff. the coast for about five years continuously, and several other engineers made trips for a long time cooperating in this work, and the results have since been published by the Railway Commission of California, and have been a distinct contribution to the knowledge on the subject of inductive interference. The telephone part of that work was carried on by our staff of engineers.

In regard to other questions of dealing with the realtion between telephone lines and high tension lines we have had a great many conferences and debates with representatives of electric light companies and individuals, to reach an agreement with them as to what is really the right thing to do where the interests class. We have

people who are doing that work right along.

I think it would be of interest to read a brief paragraph from the October 1917 Bulletin of the National Electric Light Association, which is an Association of the principal electric light companies in the United States. They have committees and hold a convention each year. This is a report of the electric light association committee on overhead line and inductive interference. They say:

"The committee is endeavoring to establish a connection with a representative in every state to keep the committee fully advised of the progress of all matters in his state relating to overhead lines and inductive interference. The advantages gained by the telephone and telegraph companies in having their interests represented by the same experienced engineers, no matter there the issue arises, are great."

I think that is a tribute to our argument, and to our methods of conducting this matter, from some people on an opposite — of the case from us.

Q. I wish you would tell briefly about protector development, and

work on the National Board of Fire Underwriters?

A. On this question of protector, in the Bell system it is a standard practice to place a protector at all subscriber stations where the lines are exposed to lightning or accidental contact with electric light or power wires. In order to protect the telephone subscriber, and his property, adequately it is necessary to use a sensitive protector. Protectors os the necessary sensitiveness have been available heretofore, but they have been sources of a certain expense for their maintenance, and of more or less interruptions to service after a heavy lightning storm.

The General Staff has been working a number of years on development looking to the production of the protector which

would avoid these objections, and within the last year we have devised and made available to the Associated Companies a substation protector in which the cost of maintenance is very materially reduced over what had been the case in the previous types of protector.

In regard to the installation of protectors at central offices and subscriber stations, I have a few typical handbooks dealing with this matter.

Q. The first one is Specification No. 3882, entitled "Main Frame Protection"?

A. Yes.

Q. We offer this specification No. 3882 in evidence, as Plaintiff's Exhibit No. 99.

(Thereupon the said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 99, as requested.)

Q. And the next is entitled "Main Frame Protection, "B" Type Frames"?

A. Yes.

Mr. J. D. Franks: We offer this specification No. 3881 in evidence as Plaintiff's Exhibit No. 100.

(Thereupon the said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 100, as requested.)

Q. The next one is Specification No. 3850, designated as Substation Protector Installation?

A. Yes.

496 Mr. J. D. Franks: We offer this Specification No. 3850 in evidence as Plaintiff's Exhibit No. 101.

(Thereupon the said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 101, as requested.)

Q. The next one is Specification No. 3918, designated as Substation Protection, Including Private Branch Exchange?

A. Yes.

Mr. J. D. Franks: We offer this Specification No. 3918 in evidence as Plaintiff's Exhibit No. 102.

(Thereupon the said exhibit was received in evidence and marked Plaintiff's Exhibit No. 102, as requested.)

Mr. Rhodes: Your question I think also referred to the National Electric Code of the National Board of Fire Underwriters. This Code prescribes the rules and methods to be followed wherever electrical construction is undertaken in a building which might affect a fire hazard insurance by any insurance company in the United States. The Code is amended every two years. One branch of our General Engineering Staff is constantly following this Code study of development pertaining to our work, so as to be ready at the proper time to lay before the National Committee any and all facts and arguments necessary to guide them in their work respecting matters affecting the interests of the Associated Companies. In this way we co-operate harmoniously with the insurance authorities and other national bodies in the preparation of a reasonable set of wiring rules with a minimum hazard to the associate companies.

497 Q. What does the staff do in regard to protection of underground telephone electrolysis? First tell us what you mean

by electrolysis.

A. Electrolysis is the term applied to the destruction of underground metallic structures. By the return currect from street railway track systems, if suitable precautions are not taken—it acts to injure and ultimately destroy the underground cables of the Associated Companies. The subject of electrolysis and protection against it has been studied many years by our General Engineering Staff, and the Associated Companies are kept advised as to the best and most effective methods for guarding against it.

At the present time there is important work under way looking to improve methods of preventing or minimizing dangers from this source. Representatives of our General Staff are co-operating with

representatives of other utilities through the American Electrolysis Committee where these proposed new methods are being carefully ex-

amined and looked into.

In connection with obtaining the maximum information on this subject, shortly before the way in Europe started in 1914 one of the Engineers of our General Staff visited England and the continent of Europe and spent considerable time investigating foreign practices in regard to electrolysis prevention.

Q. Does the electricity have an effect on the cable somewhat

similar to the effect of acid when poured on a cable?

A. It has this effect: The cable affected by electrolysis has a general pock marked effect; you can see where pieces of metal have been actually torn away, and a tendency to concentrate certain

498 parts of the sheath, and if it progresses far enough the metal will actually be carried away and an opening formed which will allow water in the cable, and that rapidly destroys its usefulness, and that is the problem which confronts the telephone company here in Houston, and the Associated Companies everywhere in cities where there is a direct current trolley railroad installation.

Q. I wish you would describe briefly the work of the general staff on commercial engineering, and describe what that term means.

A. I will be brief about that and simply say that work covers advice to the Associated Companies on the management of their commercial departments. The records and supervisory reports used in the commercial departments deal with their directory practices and this department collects, collates, analizes and disseminates useful information as to rate practices in general.

Q. A few moments ago you spoke of the insurance department.

What work is done in that department by the general staff?

A. The American Telephone & Telegraph Company maintains an insurance department for the benefit of the Associated Companies, cooperating with the general engineering staff in working out standard alarm and standard type construction for telephone buildings and standards for the maintenance and inspection of these buildings as as to reduce fire risks to a minimum, and insure a maximum of safety to employees and the telephone service; studies the best type in fire extinguishers, and recommends the best kinds and quantities of fire fighting apparatus in general; all building plans that are taken up by our staff are carefully examined from a fire protection stand-

point, including such matters as properly safeguarding exits.

499 and generally protecting the lives of employees from fire and smoke. The Associated Companies are at all times advised

as to the best practice in fire protection and inspections from a fire protection standpoint are made from time to time of buildings of the Associated Companies, and advice given as to improving conditions if any defects are found.

Q. And whenever the fire hazard is reduced, that of course results

in a saving in the matter of insurance?

A. It does.

Q. Mr. Rhodes, I wish you would indicate generally the amount of work the General Engineering Staff now has on hand, A. In what I have said heretofore, I have mentioned only a few out of a large number of engineering studies, projects and developments which have been successfully carried out by our Staff, for the benefit of all of the Associated Companies, including the Southwestern Telephone Company. I have a list of some of the instances of work completed. I have listed a number of them by subjects only, and work is also on hand for more than three hundred other subjects. These subjects as listed were covering problems dealing with plant matters only. I have not included traffic or commercial problems, but think this list of subjects gives a fair general picture of the range of the work we have on hand.

Mr. J. D. Franks: We offer this (list) in evidence as plaintiff's exhibit No. 103.

(Thereupon the exhibit was received in evidence, and marked Plaintiff's Exhibit No. 103, as requested.)

Q. Have you another list giving examples of work completed?

500 A. I have.

Mr. J. D. Franks: We offer that (list) in evidence as plaintiff's exhibit No. 104.

(Thereupon the exhibit was received in evidence, and marked Plaintiff's Exhibit No. 103, as requested.

Q. Can you refer to a few special cases showing examples of the engineering work done by the general staff specifically for the Southwestern Telephone Company in the State of Texas, and for Houston?

A. I can.

Q. I wish you would do so.

Q. Yesterday I described the subject of fundamental plans and commercial service which precede the fundamental plan of work. Our Engineering Staff experts on the subject of commercial service have visited Texas and co-operated with the engineers of the Southwestern Telephone Company in making commercial surveys for Dallas, Ft. Worth, and two for San Antonio. On that work nine different engineers from our staff were engaged, and they spent in all a total of 708 days.

In 1911 a commercial survey was made of Houston and the surrounding territory to serve as bassis for a fundamental plan. The direction and character of development of Houston was peculiarly uncertain at about that time on account of changing conditions affected by the ship canal. For this reason when conditions became somewhat more clearly established, a new survey was made in 1914,

as a basis for another fundamental plan. Our general staff 501 engineers advised, co-operated and assisted in those commercial surveys. All told, five engineers spent a total of 308 days in Houston on that work. In addition to that time actually spent in Houston, a considerable amount of time was devoted by our engineers in considering for them details of the Houston service, both in New York and at Dallas. Four different fundamental plans have been made for Houston, and I might say that it is the general custom to make these fundamental plans at rather frequent intervals whenever an important addition to the plant is contemplated in order that

the best estimate of the future can be made.

Plans were made for Houston in 1904, 1906 and 1912, and those plans were made entirely by the general engineering staff. Another plan has since been made in 1915 by the Southwestern Telephone Company engineers, following the methods devised by our general engineering staff, and this 1915 plan at the request of the Southwestern Telephone Company engineers was reviewed by our engineers after it was completed. In 1915 the Southwestern Telephone Company engineers made a transmission study for Houston to determine the most economical gauges of wire to use in subscriber and direct cables, making use of methods developed by our general engineering staff. One of the engineers of the Southwestern Telephone Company came to New York last September for a stay of several weeks to familiarize himself with the latest development in methods of making fundamental plans, particularly with reference to management of switches.

Q. What do you mean by management switching?

A. The term applies to the ordinary method of operating switch-boards. Outside of the City of Houston we have co-operated with the Southwestern Telephone Company in making 25 fundamental plans of different places in the State of Texas. We have advised the Southwestern Telephone Company in regard to many of their more important telephone buildings which they have erected or made additions to. Before this Preston Building was built the engineering details were taken up with our staff and advice given in regard to them. We have advised the Southwestern Telephone Company in regard to information on desk, trunk, circuits for the Preston Office. We have advised them regarding special private branch equipment for Houston, also regarding battery reserves and

I will only mention a few of these typical examples unless you wish more.

Q. Just a few will be sufficient.

Q. The engineers of the Southwestern Telephone Company have been over recent years repeatedly coming to New York for conferences at St. Louis with the general engineers of the Southwestern

charging generators, and methods of power supply for repeater offices.

Telephone Company.

In regard to the inspection of buildings, the insurance department has made in recent years 88 inspections of 31 buildings in the State of Texas, including 10 inspections of the three buildings in Houston. We have given the Southwestern Telephone Company advice in regard to sub-station equipment, telephone booths, including sound-proof features and in regard to special lamp receptacles to be used in electric light circuit, with a folding door tight in booth. We have advised them regarding the effect of telephone transmission, using special type attachments in telephone receivers at sub-stations.

On the subject of outside plant, we have given advice on the best and most effective methods of attaching and terminating twisted pair wires. In various cases we have given informa-503 tion regarding crossings of high tension wires over telephone We have advised them in regard to the use of special pothead wire, in regard to the best type of cable racks and hooks; in regard to certain improved types of aerial cable rings, with advice as to the patent situation pertaining to those particular rings; have given advice on the best methods for first aid. I only mention a few of these to illustrate the general nature of the work. the heading of transmission and protection we have given them data on the transmission efficiency of various types of circuits and apparatus which has been of fundamental value in the design of and construction of telephone plants in Houston, San Antonio, Fort Worth and Dallas, and in other parts of the territory, and as to obtaining the most satisfactory transmission in the best and most economical manner. At Houston, among other places in Texas, installation of repeaters have been made, and our General Engineering Staff has furnished a complete drawing and specification necessary for the installation of this equipment, and expert engineers of the American Telegraph & Telephone Company spent several months in Texas supervising installation of these repeaters.

We have given the Southwestern Telephone Company information regarding the use of a new type of inductance bridge for making measurements of telephone currents. We have given advice as to the best methods of transposing lines and protecting aerial cables from the effect of lighting and high tension crossings on open wires connected with them; on the proper construction and protection of lines subject to peculiar exposures from the wires of electric rail-

ways and power companies; in special cases we have given advice as to the best means of overcoming inductive interference from paralleling high tension lines, and I have a record of numerous visits that their engineers have made to the headquarters of the Southwestern Telephone Company dealing with these matters. For instance in June 1918, give engineers of the General Staff spent several days in St. Louis at a conference on transmission maintenance in the Southwestern system, which was attended by engineers from the Southwestern, including representatives from Texas, and these men from our General Staff presented information and read papers on the transmission subject which took up a large part of the conference program, and there have been a good many meetings of that sort, but I think this is enough to furnish a general picture of the close contact they maintain with us.

Q. You spoke of some of the engineers spending I believe 308 days at Houston in connection with certain studies. Was any extra charge made to the Southwestern Telephone Company for the time they spent here, only their expenses?

A. No; their salaries and traveling and living expenses while here

were borne by the General Staff.

Q. And that is true with reference to those conferences,—the members attending,—in this territory?

A. O yes; the expenses of the General Staff people are paid by the Staff.

Q. Why is it necessary to have those studies made with reference to fundamental plans? I wish you would take that up a little more

fully than you did.

A. In order that the extensions to the telephone system can be planned so that the entire system as it grows, will grow as a harmonious and properly co-ordinating plant, otherwise you might have one portion where you would have too much,

and another where too little, and the main cable lime would not fit back to the office buildings in the most direct way, and would have a more or less helter skelter arrangement, whereas by plan you are sure of a reasonable and co-ordinated plan whem extensions are made.

Q. Then it also results in a great useless expense, if you made serious mistakes in construction to take care of future additions?

A. Yes; there is always some hazard in building for the future; no one can predict accurately what the growth is going to be, fundamental plans enable us to minimize the hazards due to growth and in general to avoid large waste expenditures.

Q. You mentioned patents a few moments ago. Explain how telephone patents are handled by the American Telegraph and Telephone Company for the benefit of the Associated Companies?

A. The patents of the Bell system are held by the central organization for the benefit of all the Associated Companies. The Associated Companies are charged no royalty for the use of the patents. I think the patent situation can be well understood by bringing out first of all that the Associated Companies do not have to worry or think about patents at all, and they have no people in their employ who devote any time to patent matters. The reason for that is due to the work that is done on patents by the central organization. The patent department of the general staff is prepared at all times to advise the associated companies in regard to patent matters and in that way the associated companies avoid costly patent litiga-

506 tion. The patent department of the General Staff sees that the necessary steps are taken so that adequate patent protection is secured on all new developments, so that the Associated

Companies may enjoy their free and unobstructed use.

Q. Is the American Telegraph and Telephone Company striving to secure a monopoly on all patents of the telephone busines-,—is

that their object in getting these patents?

A. No. What we are trying to do is not to acquire patents with the idea of preventing other people from conducting the telephone business, but what we want is this: We want the Associated Companies protected in what they are now using; we do not want infringement suits brought against them. The most important thing of all is that the ground we wish to travel in our future development shall be protected—we do not want to be restricted from recommending to the Associated Companies in the future, what we consider the best type of apparatus because somebody else holds a patent that would prevent our use.

alike.

Q. Right there, Mr. Rhodes,—Mr. Kelsey in his testimony in this case, mentioned instances where they had some independent companies who had to remove switchboards on account of its infringing some patent. The Associated Companies are relieved of this problem by an arrangement of this kind?

A. I think so.

Q. And it is under this arrangement that the American Telegraph & Telephone Company takes care of those matters for the companies?

A. Yes; and in regard to the protection of the equipment, the companies are using numerous out of the large number of patents which in hostile hands might be the basis of successful suits

against the Southwestern Telephone Company. Now, is all of these patents were the exclusive property of one of the Associated Companies, they would not be available for the other; if one part were owned by one company, and another part by some other—uo one could have the best system. We believe it is necessary and desirable that they should be held for the benefit of all

I mentioned yesterday that out staff was on the look out for worthy ideas. One thing we do is to examine all telephone patents that are issued, and examine all devices that are submitted to us by engineers. It is the idea we look into, and not the source always, and we receive all imaginable kinds of suggestions, and all are examined sympathetically to see if they contain the germ of anything which could be made useful in the service. In the past 10 years we have examined over 5,000 patents including everything bearing on the telephone system, and we simply require the necessary rights under these patents wherever we find one we think will be useful. I have a list of the live patents that are either owned by the American Telegraph and Telephone Company, or under which it has a license, or which it controls through our ownership by the Western Electric Company. This list includes the number, the date and the name of each of the patents.

Q. You say those are live patents?

A. Yes. This is a list as of October 1, 1919, and it contains about 3,500 patents. I would like to say, however, that in this list of 3,500, there are about 20 that apply to other than the telephone business—a very small number.

508 Mr. J. D. Frank: We offer that list in evidence as Plaintiff's Exhibit No. 105.

' (Thereupon the exhibit was received in evidence, and is marked Plaintiff's Exhibit No. 105, as requested.)

Q. Mr. Rhodes, you have glanced at the boards and equipment we have in Houston plant, have you?

A. Yes; I have made a rather rapid examination of them.

Q. I wish you would mention five or six typical patents which are being used here in connection with the operation of the Houston

exchange, owned and controlled by the American Telegraph and

Telephone Company?

A. There is patent No. 856,955, which deals with the spring jack mounting plate, employed in connection with the multiple jack in the switchboard; there is patent No. 1,057,126 which covers the protector mounting used in the main distributing frame; there is patent No. 1,156,671 and 1,121,897 which covers the improved form of line and supervisory relays, and patents Nos. 1,012,125 1,109,919 and 1,109,947 which cover the combined ringing and listening key used by the operators.

Q. I think that is sufficient. The Southwestern Telephone Company gets the use of these patents under this license contract with the

American Telegraph and Telephone Company?

A. It does.

Q. Dealing upon the subject of patents, please describe generally the instrument service performed by the American Telegraph and Telephone Company for the Southwestern Telephone Company, and tell us something about the work of the General Staff which has been

done in developing these instruments?

A. This service consists in furnishing the Southwestern Telephone Company with all of the Receivers, Transmitters and associated induction coils; that is, the coil associated with the transmitter required by the Southwestern Telephone Company for giving telephone service, and also the service of repairing and maintaining these instruments, and further, whenever, a general instrument is need and a new type is brought out the Southwestern Telephone Company is under the present arrangement free to return the instruments and order the new type without additional charge to obtain new instruments of the latest type. In order to picture what this instrument developing results in, in replacing old type by new, and what it has meant, I will briefly describe a few points connected with the instrument development, and rapidly review some of the more important changes and improvements that have taken place.

The first transmitter that came from Professor Bell would be considered an exceedingly crude instrument now. Its chief feature was a membrane which operates a moving reed in front of a coil of wire, and with it it was possible to talk a few hundred feet. That was followed by various types. The first instrument which was used quite widely in commercial service was known as the Blake transmitter; it was invented by a Doctor Blake, who was an ear specialist. The American Telegraph and Telephone Company at that time secured his patent; that instrument was brought out about 1878 and it was very much more effective than any type of instrument that had been used before its time, and it was the type of instrument generally

used up until about 1891.

Q. This is what you talked into? "Examining instrument.")

A. Yes, sir.

Q. And you have a photograph of that?

A. Yes.

Mr. J. D. Frank: We offer the photograph in evidence as Plaintiff's Exhibit No. 106.

(Thereupon the exhibit was received in evidence, and marked Plaintiff's Exhibit No. 106, as requested.)

Mr. Rhodes (continuing): This Blake transmitter gave a clear transmission over short ranges, but it was difficult to keep it in adjustment. A great deal of work was done on transmitters, employing granular carbon as the active medium. The American Telegraph and Telephone Company secured patent rights to a form of granular carbon transmitter, invented by an English clergyman, Henry Hunnings. That instrument was a very imperfect one in operation; its efficiency fell off rapidly as used, and our General Staff Engineers carried out a very long and patient investigation in improving it, and finally developed it into what was known as the solid back type of transmitter, which became of use to the Associated Companies in 1891. This was known as No. 239 Type of Trans-It was used in connection with batteries and subscriber stations, and it contained an induction mounted in the swelling in the base. These instruments at the time I came into the business were rapidly sweeping out of existence the Blake type of transmitter.

Q. You have a photograph of that?

511 A. Yes.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 107.

(Thereupon the said exhibit was received in evidence, and was marked Plaintiff's Exhibit No. 107, as requested.)

Mr. Rhodes (continuing): Now this type of instrument was followed by the—what we call the No. 242 type, about the year 1900, and this was an instrument which was used with the common battery system, a bracket type of instrument with the cord outside of the bracket. These common battery instruments swept out of existence fairly rapidly the preceeding type.

Q. You have a photograph of that?

A. Yes.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 108.

(Thereupon the said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 108, as requested.)

Mr. Rhodes (continuing): This was followed about four years later by a generally similar form, but one in which the cord was concealed within the bracket arm.

Q. You have a photograph of that?

A. I have.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 109.

(Thereupon the said exhibit was received in evidence, and 512 was marked Plaintiff's Exhibit No. 109, as requested.)

Mr. Rhodes (continuing): Not about the year 1902 the form of instrument which was used in connection with the desk stand, with which we are all familiar now, began to be fashionable with telephone subscribers. The previous type of instrument had been mounted on sets attached to the wall. This desk stand required the use of a transmitter head, and this instrument No. 229 was brought out about 1902, and immediately began to displace the instruments which had preceded it.

Q. Have you a photograph of that?

A. Yes.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 110.

(Thereupon the said exhibit was received in evidence, and was marked Plaintiff's Exhibit No. 110, as requested.)

Mr. Rhodes (continuing): This type of instrument was followed by No. 329 type which began to go out in large quantities about the year 1913, and was a more efficient and effective instrument than the No. 229, which preceded it.

Q. You have a photograph of this No. 329? A. I have.

Mr. J. D. Frank: We offer this photograph in evidence as Plaintiff's Exhibit No. 111.

(Thereupon the said exhibit was received in evidence, and was marked Plaintiff's Exhibit No. 111, as requested.)

Q. Now about two or three years ago, a still further im-513 proved form known as No. 323 instrument was brought out. and that is beginning to displace the instruments of the preceding type. I have a photograph of that. A. Yes.

Mr. J. D. Frank: We offer this photograph in evidence as Plaintiff's Exhibit No. 112.

(Thereupon the said exhibit was received in evidence, and was marked Plaintiff's Exhibit No. 112, as requested.)

Mr. Rhodes (continuing): And at the same time it might be a matter of interest to note the type of induction coil that goes with everyone of these transmitters. These are known as the No. 20 induction coil.

Q. Have you a photograph of that?

A. I have.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 113,

(Thereupon the said exhibit was received in evidence and was marked Plaintiff's Exhibit No. 113, as requested.)

Mr. Rhodes (continuing): In order that I might, if anyone was interested, explain a little bit about the operation of the transmitter, I brought down a cross section of the No. 229 transmitter, which shows the working parts of the instrument.

Q. Before you take up the description of that, have you a photograph of that?

A. Yes, sir.

Mr. J. D. Frank: We offer that photograph in evidence as Plaintiff's Exhibit No. 114.

(Thereupon the said exhibit was received in evidence, and was marked Plaintiff's Exhibit No. 114, as requested.)

Mr. Rhodes (continuing): Some of the details of the operation of this instrument may be of interest. Take the mouthpiece alone,—the mouthpiece contains a rubber diaphragm which is perforated like the top of a salt cellar. The reason why that is done is this: The operative part of the instrument consists of what is termed a granular button. There is a heavy metallic bridge which extends across the interior of the instrument, and attached to that is a metallic button, containing two plates of hard carbon. One of those is rigidly attached to the rear of the button; the other is connected to the button by a little ring of mica; that mica has to be a special grade of mica that is found in India, and the thickness in order to get the best results has to be accurately between 15/10,000 and 17/10,000 of an inch. Various other materials such as paper and silk have been tried, but nothing else will serve the purpose.

Now that front electrode borne by this little mica ring is attached to the aluminum diaphragm of the instrument, against which the voice operates, so that as one speaks into the instrument, the aluminum diaphragm vibrate-, and that causes the front electrode of this button to move back and forth; this little place right in here is filled with the granular carbon,—and by this working the electric waves are produced just the same as the voice waves in the air. Now reverting to the perforations in the mouthpiece, before they were in-

troduced it was found that a telephone subscriber might
515 nervously punch a pencil into it and strike the little knot
which secures the front electrode of the button to the
disphragm; the slightest pressure against that was sufficient to injure this little mica ring carrying the front electrode, and to prevent
that this diaphragm with the holes was presented us, but it was
necessary to do considerable experimental work so as not to inter-

fere with transmission.

You will also notice on one of the mouthpieces that there are three little slots around the edge—the way that came about was this: It sometime- happened that a subscriber would be using the telephone,

and sished to speak to someone sitting beside him, without the person at the other end of the line overhearing what was said. case he would put the palm of his hand against the mouthpiece. Before these slots were cut that compressed the little mica ring by putting pressure on the diaphragm, and when this was done the suction caused it to move back, and that was enough to injure that apparatus. The perforation of the slots allowed the air to pass out without causing the pressure when he put his hand against the The granular carbon used in what is termed the butmouthpiece. ton of this instrument has been the subject of a great deal of devel-The raw material is a high grade anthracite coal opment work. coming from a special vein in a Pennsylvania mine, selected by inspectors on the ground, and however carefully they select it about 90 per cent is rejected by a secondary inspection at the factory before manufacture begins. Then it is crushed and sifted and roasted at a definite temperature so that the little grains are hard and glassy

and will make no mark on a piece of paper. There are continually in progress tests on the current output of these trans-516 mitters. Hundreds of them taken from the stock produced are mounted in racks with a receiver opposite the mouthpiece of the transmitter—the receiver is operated by a source of current from a phonograph, so that a very loud noise is inflicted on the transmitter very much in excess of anything that is commercially suggested, with the idea that in a few weeks we will get out an instrument that There are numerous is comparable to many years' actual service. other details in connection with that test. There is a heavy weight controlled by a magnet, which when replaced causes the instrument to be jarred by falling on the rack containing it. give the same effect on the instrument that would happen when a subscriber violently puts the receiver on the hook in this way. (Demonstrating.)

I think that is about all I need to say on the development of the transmitter, except t-at there have been in all about 66 different types of transmitters which have been standard at one time or another, some of them were for special uses, and not in very general use, but have been standard and furnished to the Associated Companies, and are now obsolete, and we have had pictures made show-

ing these 66 types which have passed out of existence.

Mr. J. D. Frank: We offer this photograph in evidence as Plaintiff's Exhibit No. 115.

(Thereupon the exhibit was received in evidence, and was marked Plaintiff's Exhibit No. 115, as requested.)

Mr. Rhodes: I have only mentioned the type of instrument used at subscriber stations. There are special types used by operators, and a kind of instrument mounted on a breastplate, and there are sets for outdoor use by linemen. These special sets are furnished to the Associated Companies on request in the same way the regular subscriber instruments are furnished. Q. Mr. Rhodes, I wish you would tell us something about the de-

velopment of receivers?

A. The development of the Receiver has proceeded along generally similar lines to that of the transmitter. The original form of receiver that was in general commercial use along at the time of the Blake transmitter and solid transmitter was known as the 101 type of receiver or hand telephone. It consisted of a magnet with a single pole piece and coil, with the diaphragm and cap.

Q. Have you a photograph of that Receiver? A. I have a photograph of that Receiver.

Mr. J. D. Frank: We offer that as Plaintiff's Exhibit No. 116.

A. (Continuing:) That was followed about between 1900 and 1902 by what is known as the 122 receiver, the early form, the case consisting of one piece and this was a bipolar type of receiver having two poles and two coils. It was a more efficient type of receiver than the one that preceded it.

Q. You have a photograph of that one, have you?

A. Yes, and I have on the same sheet the later form of 122 receiver which came in about 1904, the modification being that the shell consisted of two pieces which decreased to a consid-518 erable extent the breakage of the shells by introducing a semiflexible joint at this point. These two types of receivers swept out of existence the 101 form which preceded them.

Mr. J. D. Frank: We offer the exhibit as Plaintiff Exhibit No. 117.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 117, Witness Rhodes," and is filed here-

with.)

A. (Continuing:) I have also a cross-section of this No. 122 receiver which shows the method of operation. In the center is a steel magnet; attached to this steel magnet are two pole pieces; these are surrounded by two coils of very fine copper wire, insulated wire, which enter into the telephone circuit. Opposite these pole pieces is a diaphragm of soft iron which must not rest upon the pole pieces but be kept at a very small distance away. The variations in strength of the telephone current pull with greater or less degrees of intensity upon this magnet causing it to fluctuate and that agitates the air and causes the sound to reach the ear. There are three dif-ferent kinds of iron employed in that receiver, one for the magnet, another kind for the pole pieces and another kind for the diaphragm. The choice of those is not for motives of economy but for motives of efficiency and in the development of these instruments, every detail has to be worked out with great care. The dimensions of the air chamber between the cap of the receiver and the diaphragm have to be very accurately adjusted as well as the dimensions of

the diaphragm itself and the separation from the pole pieces. 519 Q. Do you have a photograph of that?

A. Yes.

(Mr. J. D. Frank: We offer the photograph in evidence as "Plaintiff's Exhibit No. 118, Witness Rhodes," and is filed herewith.)

A. (Continuing:) Now, the instruments of that type have within recent years been being swept out of existence by a type which was developed about 1912 and is known as the unit type of receiver because the magnet system and the pole pieces and the coils are made in one mechanical unit, which has the advantage of being dust-proof. fits very closely over the cap and the diaphragm bears against a brass ring and excludes dust and decreases the maintenance trouble That is know- as No. 144 receiver. with that type of instrument.

Mr. J. D. Frank: We offer the photograph of that as Plaintiff's Exhibit No. 119.

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 119, Witness Rhodes," and is filed herewith.)

A. (Continuing:) All in all, there have been since the early days of the business 28 different types of receivers which have at one time or another been standard for certain purposes.

Q. You have photographs of those? A. And I have photographs of those.

520 Mr. J. D. Frank: We offer the photograph in evidence as Plaintiff's Exhibit No. 120.

(The Photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 120, Witness Rhodes," and is filed herewith.)

Q. Now, what is done in the way of subjecting these instruments

to live tests, Mr. Rhodes?

A. I described that this morning, in the way of those transmitters, hundred- of them, at a time, are tested from every lot that comes along in order to maintain the standard.

Q. Where you have them ranged on a board and give that board

a jar?

A. Yes, and they are continuously talked into by means of a

phonograph.

Q. Have you investigated the subject and have you an opinion as to what it would cost the Southwestern Telegraph & Telephone Company to provide its own telephone instruments if it did not obtain them under the present arrangement with the American Telephone & Telegraph Company?

A. I have.

Q. What are your conclusions with reference to that subject?

A. I have prepared an exhibit showing what in my opinion it would cost the Southwestern Company to provide its own arrangements if it didn't obtain them under the present arrangement and I I would like with your permission to explain that in detail.

Q. You have an exhibit on that?

A. I have.

521 Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 121.

(The statement was thereupon received in evidence, marked "Plaintiff's Exhibit No. 121, Witness Rhodes," and is filed herewith.)

Q. Now take up that exhibit and explain it to us, Mr. Rhodes, in detail.

A. In preparing these photographs, the physical unit which I have covered is a "set of instruments." In the term "set of instruments" we include the transmitter with the induction coil that is associated with it and the receiver. Those three parts constituting a set, are furnished to the associated company by the American Company for every subscriber's station. Instruments similar to these are sold by the manufacturing company on the open market in competition with instruments made by other manufacturers. The market price today for a set of these instruments is \$5.30.

Q. Why have you used the figure of \$4.50?

A. I have used a figure of \$4.50 because I believe that if the Southwestern Company, instead of obtaining the instruments under the present arrangement were to equip itself throughout the State of Texas, I believe that if the Southwestern Company in the State of Texas were to provide for itself its own instruments in the large quantities in which they would have to buy them to re-equip themselves, that they would be able to obtain them at a lower price than the present market price of \$5.30, and in order to not over-estimate the value of those instruments, I have taken the figure of

\$4.50, which I think is conservatively low, for that purpose. Now, I have undertaken to compute, as best I could, in my judgment, on these instruments. In Item 3, I have taken an eight per cent return on the investment of this \$4.50 which gives an item of 36 cents. I have taken an eight per cent return because I believe that for a public utility business, with the risks involved in connection with that kind of business, that a return of eight per cent was the lowest reasonable rate of return. Moreover it has often been allowed by commissions for that purpose and it seems to be about the minimum rate of return at which money can be attracted into a public utility enterprise, such as the telephone business. The telephone Company must obtain their capital in competition with others. They have not got the money and they must go out and hire it in competition with other people and I think that the rate compares favorably with the rate of return on mortgages and other invest-In Item 4, I have taken an eight per cent reserve for replacement and I base that on my general information and experience in connection with telephone instruments. The proper rate of reserve for replacement cannot be computed by a formula. The best thing that we can do in the way of a determination of what the reserve should be is to take what our experience of 30 years has shown, and look over the whole situation, and apply our judgment to it, and the value of that judgment depends on the knowledge, experience, ability and integrity of the people who exercise it. does not take account of any of the instruments which are repaired and reconstructed, but it only takes care of the instruments which

are junked when they are returned. It covers not only the wear on the instruments but it covers the replacements due to obsolescence, inadequacy and the progress in the art. reserve must be sufficient to permit us to keep pace with the art as it advances or as the results of developments that we are making. and from that point of view, the reserve is the price of grogress in In the item of repair, shown on line 5, I have based that on what it costs the American Company today to repair instruments on the basis of the repairs that are made all over the country and I don't believe that the Southwestern Company, if it undertook to repair its own instruments, could do it any cheaper than that. line 6. I have allowed one per cent for cost of administration because I believe that the Southwestern Company could not undertake the work of purchasing its own instruments, of inspecting them as they are received, of keeping track of their requirements, and warehousing and handkling the instruments without incurring an administrative expense, and I think that one per cent is a conservatively low figure for that purpose. In the 7th item, I have allowed a two per cent reserve for contingencies and I have done that because it has been my experience that engineers' estimates including my own are more part to be over-run by the fact than to be under-run. the same experience that one meets if he builds a house and makes a preliminary estimate of what that house is going to cost him, and more often when he is through it costs him more than he has estimated, then less. If I knew that the nature of these contingencies were, I would have attempted to valuate them, but I have merely put them in as a factor of safety on the estimate as a whole. Now Now in these figures I have taken no account of the

expense of developing the instruments or the expense of These five Items add up to a sub-total of 90½ cents. it is a fact that a telephone Company has to have more sets of instruments than it has subscribers' stations. It has to have a few instruments to come and go on. Some instruments that are in process of being returned to the warehouse and a few that are on the way out, but more particularly it has to have instruments for the operators at the switch-boards. And it has to have instruments for the use of its employees for testing purposes and it usually runs from five per cent up as an excess over the number of stations. I have therefore increased this sub-total of 901/2 cents by five per cent, giving me a figure of 95 cents. Now the American Company carries a reserve stock of instruments which, over a period of 10 years, has averaged over 71/2 per cent of the number of instruments in service. purpose of carrying this reserve stock is, so that the associated companies will never ask for instruments and be denied them because there is no adequate supply. The reserve stock guards against a depletion due to a sudden increase or growth among the associated companies which might call for instruments faster than they could be manufactured for a time. It guards against interferences with the supply of materials that enter into the instrument, so that in case of a fire in some factory manufacturing some parts of material, or if there was a delay due to strikes or due to delays in transportation that the furnishing of these instruments to the associated companies would not be interfered with. I have assumed in

525 these figures that the Southwestern Company, if it provided its own instruments, would desire this same precaution against interruption, and to be on the safe side I figure on a six per cent stock. In line 13, taking six per cent of the value of the first cost of the instruments, \$4.50 I arrive at 27 cents, and in figuring the handling charge on that reserve stock I have only figured a return and cost of administration and an item for insurance and contingencies. I figured no reserve for replacement and no repairs for the reserve stock. That item adds 3 cents to my figure of 95 cents, or a total actual cost per station of 98 cents. Now I might mention that if I had taken instead of \$4.50, the present market price of \$5,30, this figure would have come out instead of 98 cents per station per year, would have come out \$1.15 per station per year and I think that somewhere between those figures and not lower than about 98 cents is what the Southwestern Company could provide those instruments for if it did not obtain them under its present arrangement.

Q. Mr. Rhodes, do you know how much this payment to the city

of Houston amounted to last year?

A. Why, I have been told it amounted to about \$1.70 per station, \$43,528.00.

Q. Yes?

A. And approximately twenty-seven thousand stations. How much is the amount?

Q. \$43,528.00.

A. Well, that is, almost \$1.61.

Q. How do you think that this estimate that you have made here, what it would cost the Southwestern Company to provide its 526 own instruments, is a conservative estimate, do you?

A. I do, ves.

Q. That amounts to a total annual cost per station per year of 98 cents?

A. Yes.
Q. Then how much would that leave Mr. Rhodes out of that \$1.61 for those other services that you have described?

A. 63 cents. That is a little over 5 cents per station per month. Q. For all of the other services legal, accounting, financing-

A. (Interrupting.) And engineering.

Q. And engineering. Yes, pardon me for overlooking the most important part. It amounts to approximately 5 cents per station per year-per month?

A. A little over that, yes.

Q. Mr. Rhodes do you know of any place where the Southwestern Telegraph and Telephone Company could get the services similar to those it received from the American Telephone and Telephone Company at a cheaper rate?

A. No, I don't.

Q. Do you know where they could get similar services at all if they didn't get them from the American Company?

A. No, I don't.

Q. Is there any concern in the United States or anywhere, that renders the services which you have described here on the basis that this company renders them?

A. No. I don't know of any.

Q. So far is there any other organization which compares with that? 527

A. No.

Q. I believe that is all. One other question, Mr. Rhodes I will ask you to state whether or not in your opinion the value of those services is as great as what is paid for by the Southwestern Tele-

graph & Telephone Company?

A. Why I think that comparatively few savings have been accomplished. The fine wire cable saving, and the saving in ducts due to that, and the saving due to antimony sheet, and a few of the other items, if valued, would show a saving to the Southwestern Company many times what the payment amounts to.

Mr. J. D. Frank: That is all.

Cross-examination.

Questions by Judge Powell:

Q. I believe you said yesterday that all of the associated companies were paying you this 41/2 per cent?

A. Yes, sir.

Q. Have you any idea what the total amount per annum of that last contract is to the American Telephone & Telegraph Company?

A. No sir, I don't keep tract of that.

Q. You said that the American Telephone & Telegraph Company own some long distance lines itself, I believe? A. Yes it owns long distance lines connecting the associated com-

panies, yes sir.

528

Q. And some work of the general staff is for the benefit of the long distance lines?

A. Yes, some of it is. Q. Now does the American Telephone & Telegraph Company set aside to itself any 41/2 per cent?

A. I understand it does, yes.

Q. Do you know what the total expenses of maintaining this general staff is? A. No sir, I am sorry, but I don't have to do with the account.

Q. I was just trying to really see what profit there was in the maintaining of the general staff.

A. Well I am sorry I can't tell you.

- Q. What the total income is, and what the expense of conducting it was.
- A. I know that the expense of conducting it is very much greater than it was a few years ago.
 - Q. But the income is also greater, isn't it, Mr. Rhodes?

A, I presume so.

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Q. As the companies enlarge and their receipts necessarily grow?

A. I presume that is so but I don't keep tract of it.

Q. Do you know what proportion of the capital stock of the Southwestern Telegraph & Telephone Company is owned by the American Telephone & Telegraph Company?

A. No, I don't but I understand that the American Company

majority stockholder.

Q. Now you said yesterday that the benefit of the work of the general staff for which the 4½ per cent is charged, might be classed as two-fold, first, benefit which was general to all the associated companies and second, specific benefit to such of the associated companies?

A. Yes sir, I made that statement.

Q. Now assuming that the American Telephone & Telegraph Company owns 99 and 99/100 per cent of the capital stock of the Southwestern Telegraph & Telephone Company, don't you think that it owes to the Southwestern Company these general benefits?

A. Why I would not regard that it was doing it for itself. It seems to me that it is a separate organization. If the American Company should loan money to the Southwestern Company, I should expect it to take the Southwestern Company's note for it, and I should imagine that the American Company might at any time sell its stock in the Southwestern Company and this relation would continue. I would look at it comething like this: If I were president of the Southwestern Telephone Company and were paid a just salary for my services and I became a stockholder in the company, I would not expect to have my salary reduced on that account.

Q. Well no, but you were speaking about the development of the art and the general benefits now which goes to all the associated companies. If it owns practically the entire stock of this concern here, don't you think it is really benefiting itself and not benefiting

the Southwestern Company?

A. Why I should say that the benefits go largely to the public, because it means that by these benefits the telephone service is given at a less cost to the public than would otherwise be the case. I might point out in that connection that there was two of the associated companies, the company operating in the State of Connecticut, known as the Southern New England Company, and the Cincinnati Company, which operates the territory around and including

530 the city of Cincinnati, in which the American Company does not own a majority interest and they have this same 4½ per cent arrangement and I understand are glad that they have it. Now a number of years ago, the Michigan Company was taken over by the bond holders under conditions which I understand enabled them, if they wished, to cancel all existing contracts and they made an independent investigation of this license contract and decided that it was to the benefit of the Michigan Company to continue it.

Q. I was just trying to really get at the point, from what little investigation I have been able to make that it is after all but another way of getting that much dividends. If I own a concern so absolutely that I control practically all of its stock and then furnish it cer-

tain services and get money back. I am getting that much dividend on my services.

A. Well it seems to me that that is getting into a point that is more of a legal point than an engineering point. What my knowledge is confined to since I have been connected with the Company, I have

been part of the machinery for furnishing these services.

Q. I don't dispute that really you do perform services. I am not taking any issue with you on that. I am sure you do, and the art has developed wonderfully, but after all I think in case of specific services, especially furnishing these instruments, you would certainly be entitled to a return on their value in a rate bearing, but I can't help but feel like the 4½ per cent contract as a whole is simply a way of getting another dividend. It would not mean 41/2 per cent on your value year at all. I conceive it would be considerably less

than that. I believe you said vesterday, Mr. Rhodes, that the Western Electric Company is a manufacturing branch of the

Bell System.

A. Yes sir.

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Q. Do you know what proportion of the stock of the Western Electric Company is owned by the American Telephone & Telegraph Company?

A. I don't know the proportion, but I understand that the Ameri-

can Company is the majority stockholder.

Q. Do you know what dividend the Western Electric Company paid last year?

A. No sir.

Q. You don't know what amount of profit it has made in the last few years on the equipment sold to the Houston exchange here?

A. No sir, I do know this that the Western Electric Company sells a very considerable amount of telephone apparatus in competition with other manufacturers in the open market, and I understand that the associated companies never pay more than that market price and generally pay less, for the same apparatus,

Q. In that same connection, it has been intimated here that the American Telephone & Telegraph Company had an interest in the Estanaba, Michigan pole interest. Do you know whether that is

true or not? Do you know anything about that?

A. I have been told,-this is only hearsay,-but I have been told that the Western Electric Company has no interest in any pole company.

Q. Well has the American Telephone & Telegraph Company any

interest in it?

A. Not so far as I know.

532 Q. Not so far as you know. I had heard that intimated here in the hearing, and then I heard it from others on the outside who suspected it. I didn't know anything about it. I believe you said yesterday that the recommendation of your general staff with reference to engineering matters and other matters is not binding upon the associated companies. Now dealing in the matter of substance and not form, Mr. Rhodes, how long do you think an

official of the Southwestern Company would last if he took issue with you and your staff finally upon telephone instruments and tele-phone policy generally?

A. Well I can say on that that we have a good deal of debate in the family between our general staff engineer and the engineers in the field about a great many points, and we listen to everything that they have to say and if they convince us, we change our recommendations, and there are a good many instances where they willin some matters we recommend a standard. They can't change that right away because they don't think that is the right thing to That is all within their judgment. do right away.

Q. It might be of course a temporary delay in the matter, but I mean you said now thay don't have to take up your recommendations Suppose that after all the debate has been had now-

A. (Interrupting.) Yes.

Q. And all has been said between you and them, they persist in refusing to carry out your recommendations, which of course are in line with your standardizing plan everywhere, don't you think it likely that they would find a position somewhere else shortly?

A. Why I think that if they persisted in disregarding the best advice as to what they were going to do, that the executive officers of their own company would be worried about it and 533 they might take action, and if you will permit me, I think

they follow our advice just the same way that you follow the advice of of a physician in whom you have great confidence because he had

helped you before.

Q. I think myself that they would follow it, and I couldn't help but be somewhat amused by the apparent statement that it wasn't a matter with them. A concern ow-ing a stock in its entirety or practically so, I take it that they would manage it anyway, naturally, and if their policy is not adopted that the other officials will go.

A. What I had in mind is we don't issue instructions, we don't say, put in this relay, or this type of circuit, but we tell them that we have developed the things that accomplishes better results and we think it is better than what existed before for the following

reasons, and we give them the reasons for it.

Q. Yes, you are polite about it, but ninety-nine times out of one

hundred, your instructions are obeyed, aren't they?

A. Why we don't have any follow-up system to see whether they Our engineers will go out into the country and they will go around the local plants with the local engineer and if they find he is doing something that they don't consider the best practice, they will call his attention to it and tell him they think there is something better. We have never had that side of it come up.

Q. No, that is what I was thinking. And likely it will not come up I am thinking. Now you said yesterday you believe it is better as a financial policy for the Southwestern Company to pay this

41/2 per cent on a gross receipt as a license fee rather than to pay for each specific piece of work done for this particular company?

A. Yes, sir.

Q. Is that just a general estimate, Mr. Rhodes, or did you ever try to figure on what it would cost them to have gotten the advice in each case for instance did you ever go through your books and see how many times they wrote you for certain advice, and how many times you sent men here, and how many times they sent men there,

and see what that would run each year?

A. No, I have never done that and I don't think it would be possible to do that, because we don't keep our records of work that way. We don't keep any record of dealing with the company separately, but our men on this development work will charge up their time and expense to general work, just as work on the preservative treatment of poles or work on the supplies of a grial cable and whatever is done is charged to those general subject headings. I don't know how that could be done although I don't have anything to do myself with the keeping of the books.

Q. It is then your stat-ment that it was better to pay it this way. it was just a general idea that you have because of your knowledge

of the work that is done for the associated companies?

A. Yes, sir, I believe it is so.
Q. You have never applied it to any specific company?
A. Not to any specific Company but I believe it is better for the reason that if some question is raised that applies particularly to all of the companies we are now able to take that up and work it wout exhaustively for the benefit of them all.

535 Q. Now you said yesterday that the engineering staff of the associated companies—I believe you said that each of the

associated companies had an engineering staff?

A. Yes.
Q. They are not trained to that high degree of efficiency that the

general staff was?

A. I don't think you quite got my point there. I didn't mean they were men of inferior ability in any way, but merely that they are specialists along different lines. The engineers of the general staff have become specialized, each man in the work that he is doing, and that is different work from what the engineer in the field is doing. Now I don't mean to say but what if Mr. Pennell, who is the engineer of the Southwestern Company, and I were to exchange jobs, but what after getting into the atmosphere of the engineering and research work that he could conduct my job just as well as I It is a matter of envior-ment and association and organiza-I meant t- bring that out rather than it was a matter of any difference in the person-el. Of course there if a further point, that for certain lines of research work we pick out men who are trained along those lines. If we want a man who is going to take up some of the higher mathematical work, we go to the colleges and take a young man who has got a degree of doctor of philosophy in mathematical phisics and we pick him for the job. Now I never picked a man that had a degree of doctor of philosophy in mathematical physics to be an engineer for an associated company. He is not the type of man for that character of work.

Q. No, I see. At the same time the Southwestern Telegraph & Telephone Company itself has a corps of engineers.

536 A. It has.

Q. Now if it were not for the fact that they are relying on the American Telephone & Telegraph Company's general staff, would they or not develop themselves to a very much greater efficiency and could they become really as expert as was necessary?

A. Why if they built up a sufficiently large department and added hundreds of men to their staff, the same type of men that we have got, and undertook to build up a similar organization, why they could get quite a direction along that that line and so would each of the associated companies.

Q. Not taking hundreds of men, but I mean taking their own forces, if they realized they couldn't go to you for advice, wouldn't they go to work themselves and run these things to a certain extent.

to a large extent?

A. I presume they would go to work and undertake to do the best they could, but I don't think they would accomplish anything like the result with the forces that they have got now. They would have to have a vastly increased force to do the same thing.

Q. I believe you said that the hard drawn copper wire, the invention with reference to hard drawn copper wire, was beneficial mainly

to long distance, did you not?

A. I don't know whether I said that or not, but it is principally applicable to the long distance lines of the various companies. It is used in the long toll lines of the Southwestern Company in the State of Texas very largely.

(By Mr. D. A. Frank:)

Q. You use hard drawn copper wire in aerial cable, don'

you?

A. No, the wire in the cable is soft drawn, but we do use a hard wire in the twisted pair that is used for the drop wire from the cable terminals to the subscriber's premises and there is, too, as I remember it, two million feet or so of that kind of wire in Houston.

Q. The open wire in the city that is copper would be hard drawn,

wouldn't it?

A. Yes, but I believe there are only comparatively a few miles of tjat within the city.

(By Judge Powell:)

Q. You named quite a number of benefits that had been derived from certain inventions, but in many of those instances they are ben-

eficial largely to long distance matters, you said?

A. Why, some of them are. Now take the matter of loading. Loading throughout the country is used more by the associated companies in their local plants than it is in the long distance lines, but the use is beneficial in the large cities where the trunking distances between offices are very great. There is a little loading in Houston, I

understand, today. The trunks that were placed out to Camp Logan were loaded, but generally the Texas cities are not of sufficient extent as a rule to require very much loading. Loading is used on the toll lines in the State of Texas. The application of the phantom circuit in Texas is largely a matter of the toll lines and the use of repeaters is, but the other matters that I mention, the whole engineering of the exchange, the development of the underground conduit, the development of the cables that are used, the sub-station apparatus, and the central office apparatus, all those are matters that affect the local ex-

change plant in Houston. We cover the whole field of tele-

phone engineering for these associated companies. 538

Q. Now I believe you said that you had made, that there had been several fundamental plans made for Houston.

A. Yes, sir.

Q. One back in 1904.

A. 1904.

Q. Another one 1906 and 1912.

Q. Now you haven't made any fundamental plans yourself since that time, have you?

A. No, sir, there was one made in 1915 but that was made by the Southwestern Engineers following the method outlines by our staff.

Q. And was sent to you for final approval, I believe you said, to look it over?

A. For review to see if we had anything to suggest about it. Q. Now getting down to specific work for the Houston Exchange; how many men did you send here in 1919?

A. To Houston?

Q. On any kind of work, yes, sir?

A. To Houston? I don't suppose that we sent any engineer to Houston in 1919.

Q. How many in 1918?

A. I have no record of that but I shouldn't be surprised if anyone came here, because the questions that we take up with the engineers of the Southwestern Company are taken up generally either by our men going to St. Louis or by the Engineers from St. Louis coming to New York.

539 Q. Well then you don't know of any in 1918. Were there any trips made to Houston in 1917 that you know of?

A. Not that I know of, no, sir.

Q. All right, 1916? A. Not so far as I know.

Q. 1915?

A. Not as far as I know.

Q. Well can you tell me how many times you sent men to St. Louis during any of those years to meet men from Texas?

A. Oh I can tell some of those cases, yes, sir.

Q. With reference to the Southwestern property to the city of Houston.

A. Mr. Barnett, our commercial engineer, was in St. Louis in 1917 for several days, and he was in Dallas for a couple of days. Mr.

Mandel was in St. Louis for three days in 1919. Two other men from the commercial department were in St. Louis, one from March 11, to June 9, in 1919—to June 7, 1919. Another one for a period of six days in April, and another one for seventeen days in 1919, and another man in 1918 two days. They were assisting the Southwestern Company in studying directory problems and approving directory practices applicable to the whole Southwestern group of companies.

Q. Were any of those trips taken for the exclusive benefit of the

Houston Exchange?

A. Not for the exclusive benefit so far as I know, no sir.

Q. Now how many times during those years did engineers of this company visit New York with reference to problems peculiarly applicable to this Houston Exchange?

A. You mean, problems to the exclusion of any other prob-

lems in the-

Q. Yes sir, that just came there to get benefit for this particular

exchange?

540

A. I don't believe that they came for that purpose. You see that the problems of telephone engineering are of a general nature, so that the problems that apply in one place apply to other places. It would be very unusual for some very special condition to arise in Houston that would not arise anywhere else, but they are problems of general developments which apply to stations of similar character throughout the whole territory.

Q. Do you know how many letters you have written to the Southwestern Company about this Houston Exchange during the last four

or five years?

A. No I haven't kept any record of that,

Q. Then as a matter of fact, except for the rental on these instruments, whatever that might be worth, that you furnished the Houston Exchange, you have not very much definite date about what

peculiar benefits Houston gets, have you?

A. Why, I know that we have furnished all this information about the standard practices and we developed the materials that are used throughout the Houston Exchange. I can give you examples of forty or fifty different kinds of standard materials that are used in the Houston Exchange that were developed by our general engineering staff, and the consumption methods as I have seen them in going about the city are those that have been developed by our general staff. Now that does not mean that those methods are peculiar to Houston and not used anywhere else.

Q. You don't know whether the engineers here would have developed those same ideas of their own accord or not?

A. I don't believe that they would have developed these ideas extensive as when each one of them was developed in extensive details by a specialist.

Q. Now in reference to making a fundamental plan for the laying out of an exchange here locally in Houston, did the New York engineers come here and look over the ground, or did they just do it by correspondence?

A. No they came here. That was the figure that I mentioned of one hundred and eight days that they were actually in Houston.

Q. Isn't it true that a man on the ground would be much more

qualified to do that than a man who wasn't?

A. I think that we had a man on the ground too. Our men came here and conferred with the men on the ground and they furnished them practical information for doing the work all the time and they put their heads together with the men in Houston familiar with the situation and together they got the best answer that they could. don't want to give the impression that these people came here from New York and say they can make a better guess on conditions here in Houston than people here locally, but I do think that by supplying this information as to the general methods and the results of growth found elsewhere, they can contribute something and local men contribute something and together they get a better answer than if the locan men went at it independently.

Q. I believe you said yesterday that after having tested out rather thoroughly at Newark, N. J. the automatic system, that you are now actively engaged in installing that system

and would do so as fast as was practicable and you predict that within ten years the common battery system would be practically a thing of the past in the Bell System?

A. I think that we can look forward to that, yes.

Q. About ten years' time?

A. It may be longer than that? Q. Yes you thought about ten years.A. But that is what we are told.

Q. Who are the main manufacturers of automatic equipment, Mr. Rhodes?

A. Why we are planning next year to have equipment for about two hundred and thirty five thousand lines manufactured by the Western Electric Company and equipment for about seventy five thousand lines manufactures by the Automatic Electric Company of Chicago.

Q. Is the Automatic Electric Company now under the control and management of the American Telephone & Telegraph Company?

Do they own the stock?

A. Not so far as I know. Q. Not so far as you know? A. No.

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Q. It is a fact, is it not, that you have bought practically their entire output for the next few years, the Automatic Electric Company?

A. Why we have contracted for as much as they can manufacture and and under our specifications, yes. 543 introduce this in practice as rapidly as we can,

Q. The Western Electric Company itself is going to manufacture

that equipment?

A. The Western Electric Company is going to manufacture one hundred and twenty five thousand lines this year and they are building additions to their factories as fast as they can to increase the output.

Q. Well when this Preston building was erected Mr. Rhodes, just what work did the New York engineers do about this building, do

you remember?

A. Why I understand that the local people, as I recall it, it was Mr. Gates at that time, he came to New York on several trips and brought the proposed plans for the building to get whatever comments and suggestions he could from our people in regard to it.

Q. The plans then were prepared here?

A. The architectural plans were.

Q. And they had in mind what they wanted pretty well and went to New York and conferred with you about it?

A. That is very frequently the case.

Q. Now then these instruments, the transmitters, receivers induction coils furnished by the American Telephone & Telegraph Company to the Southwestern Company, and especially to its Houston branch, you think could be bought for \$4.50 per set because of the fact they could be bought in wholesale lots, large lots?

A. I think they could be bought in the size lot if the company undertook to furnish them. I think they could get

th-m at that price, yes.

Q. And that the investment in these instruments, including reserve for replacement and all charges against it, would be about 98 cents per station per year?

A. Yes, sir. That is, I think it would be not less than that. It

might be more but not less than that.

Q. And that much is the main specific charge that you can make

for work done exclusively for Houston?

A. Why I don't say it was the main specific charge. It is one portion of the service and I would not discriminate between that and these other services applying to the design of the plant and its operation and its maintenance. They are all of value and together they amount to the whole service.

Judge Powell: I believe that is all.

Redirect examination.

Questions by Mr. J. D. Frank:

Q. Mr. Rhodes at the time the properties of the Telegraph & Telephone Companies were taken over by the United Stats Government and the Postmaster General, do you know whether or not the Postmaster General made any investigation with reference to this license contract and 4½ per cent payment?

A. He did look into it at that time through his Post Office Committee which consisted of Judge Lamar, and Mr. Toons, and one other Post Office official whose name I don't remember. Oh yes,

Mr. David Lewis.

Q. Was this contractual relationship approved by them and the payment approved?

A. I understand it was. During the period of government operation our staff remained with the corporation and the wire administra-

tion continued this payment for our services.

Q. Now at the time this matter was investigated and the payment was approved, did the American Telephone & Telegraph Company have anybody on that board that investigated the subject and approved it?

A. In so far as I know at that time. That came up before the

advisory committee of telephone officials were appointed.

Q. Who was the Mr. Lewis that you speak of? That was Mr. David J. Lewis?

A. Yes, I am not sure that "J" was his middle initial but his name was Lewis.

Q. But what official position did he occupy under the supervision of the Postmaster General?

A. He was one of Mr. Burleson's advisors.

Q. Mr. Lewis was one of the greatest exponents of government ownership of Telegraph & Telephone Companies for a number of years prior to the period of government operation, was he not?

A. I understand that is so, yes.

Q. As a Congressman?

A. Yes. Q. Now would the American Telephone & Telegraph Company be able to carry on this work that you have mentioned if it did not receive these payments from the associated companies?

A. Well I don't know very much about that end of it, but

546 I should not propose that it could.

Q. I believe you testified yesterday that you would not need any such organization as this with the long lines department of the American Telephone & Telegraph Company.

A. Not anything like the extent that the organization is now.

Q. Just roughly can you give us approximately the number of men that are used in this organization for the purpose of carrying on this work that you have been describing, in point of numbers?

A. I think I mentioned that there were about five hundred and fifty employees in the two technical departments, the development and research and the engineering department and it is my impression that the entire general staff amounts to somewhere about a thousand people.

Q. And if one of these associated companies wanted to carry on work of this kind on an extensive scale, why they would have to

employ several hundred men to carry on this work.

A. I don't see any other way that they could do it.

Q. Now counsel has asked you if the engineers of the Southwestern Telegraph & Telephone Company could not carry on this work. If they were carrying on this research and development work, Mr. Rhodes, would they have time to do the work that they are now doing?

A. Well I didn't comtemplate that these same people would try to do it because it was my impression that they are all busy on the company's business now and if they undertook in the Southwestern to carry it on they would have to get all these people from the outside to do it.

Q. So far as the engineers of the associated companies are concerned they are busily engaged in the operation, main-

tenance and construction of the plant?

A. Yes, to do that thing that you are talking about would be to revert to antiquated methods in the telephone business. Many years ago that situation existed to a great extent that people around in the associated companies were occupying themselves with inventing, and the result of it was that they were not attending to their duties of properly engineering the plant and one of the things that has been accomplished has been to concentrate that work and specialize it in some place so that the man around the country would not be employed haphazardly but could stick to their job.

Q. You have stated that the repeater which you have described here used in connection with the toll lines, that enables the local exchange to obtain better long distance service, dozen't it Mr.

Rhodes?

A. It certainly does.

Q. It enables the subscribers in the city of Houston to talk, I believe you testified, to any part of the United States.

A. Yes sir.

Q. In addition to the instruments which the Southwestern Telegraph & Telephone Company have been using in Houston, they have also been using the patents owned and controlled by the American Telephone & Telegraph Company that exists on the other materials in this plant, have they not?

A. Yes.

Q. That is all a part of the 41/2 per cent payments?

A. Yes, of course in regards to these repeaters that you mentioned, you understand they get those under the 4½ per cent arrange-

548 ment just like the instruments.

Q. Yes sir, but I am speaking of the local material here in Houston, you mentioned some five or six typical examples this morning of the patents pertaining to the local exchange here which this exchange is now using and that is over and above the instruments which the company has been using here in Houston?

A. Yes, that is a different branch of the service.

Q. And in addition to that you have been doing this development and research work all of these years which will redound to the benefit of Houston, as well as other places.

A. Yes, that is a continuant proposition. Q. And you are carrying on this work?

A. Yes, more men and more people engaged on it now than at

any time as well as I can remember.

Q. With reference to the automatic, it is a fact that so far as the use of the automatic is concerned generally at the present time you are using them for extensions to existing plants, aren't you?

A. Well the fact is that for the next few years till we can make, or build factories to manufacture it and get other people to manufacture it for us, that the output will not much more than take care

of the extensions where new offices are required to be opened and where on account of overcrowding it is necessary to replace existing equipment.

Q. And you would not go into an exchange like the city of Houston and tear out the switchboards that you have here at the

present time and put in automatic equipment, would you?

A. We can't make it fast enough to do that.
Q. It may be something like ten, fifteen or twenty years before you tear out the equipment which is sufficiently serving the public at the present time?

A. Well it would be my hope that ten years would see the city

pretty well equipped throughout with it.

- Q. As a matter of fact, Mr. Rhodes, haven't a number of the commissions placed more value on these services which you have described than they place on the value of the instruments which are used by the companies? Are you familiar with the commission's decision?
- A. Now I am not familiar with them in detail as to that point. number of commissions I know have approved the relation and the In some cases I recall that they have attributed license contract. more value to the services than the instrument service but I couldn't name off-hand the particular commissions that did.

Recross-examination.

Questions by Judge Powell:

Q. I believe you said that the Postmaster General and his department has approved this 41/2 per cent contract?

A. Yes, sir.

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Q. The government during the war did not pay much attention to economy did it, to doing things in an economical way, it was to do them quickly and do them efficiently was all they thought about, wasn't it Mr. Rhodes?

A. Well I don't know, that is a pretty large question.

Q. Well isn't it common knowledge that they threw away hundreds of millions of dollars in order to get things done rapidly rather than in an economical way?

A. Well I don't think they did that in the telephone business.

Q. Well I am speaking generally, in the conduct of the war and the purchasing of materials in all these contracts, didn't it lose sight of being economical?

A. Well I don't know any more about that than what I have read in the papers and I have read statements in the papers that large

sums of money were spent with but little returns.

Q. That is what I mean, that the government did not scrutinize things much in reference to doing things in an economical way, they made their contracts and approved their contracts based largely on having things done efficiently and quickly.

A. That may be true.

Q. Being quick was the main thing they were interested in, had to

do it now. You said that you didn't know just what the total receipts over the United States amounted to from this 4½ per cent?

A. No sir.

Q. And that you didn't know the total expense of your department, of 505 men, whatever it is?

A. No, we are specialized so that I don't have anything to do with

the keeping of the account.

Q. Have you got any idea about the margin of profit in this department?

A. No.

551 Q. Could you furnish us in figures for any one year on that point you reckon?

A. No. I could not.

Q. I would like to know, some people have an idea that there is

100 per cent profit in it and I don't know myself.

A. Well, I have heard some testimony in a case once up in Missouri that the cost of the service was in the neighborhood of 90 per cent of what was received from it.

Mr. D. A. Frank: 92 per cent Mr. Rhodes.

A. (Continuing:) Well it was in the neighborhood of 90 per cent. Now I am telling you everything that I know about that.

Q. When was that testimony given, do you remember how many

years ago?

A. Why I think that it was about three or four years ago.

Mr. D. A. Frank: 1916. Of course it is our contention that it wouldn't make any difference if it were 100 per cent, which of course it is not, but it wouldn't make any difference what the per cent of profit is in that. The question before the court here would be the question as to whether or not the services were worth the money. Now we have not gone into that and don't intend to go into that because we don't think it is material. We don't believe it is material any more than to find out from the manufacturer of copper what he makes on copper or from the man who is growing poles what he makes on poles. If the poles are worth the money, that is the main thing we are interested in in this case. So that

if the services are worth the money and we think the evidence conclusively proves they are worth the money, it

would be immaterial what it cost. Now the court can easily see the embarrassment that we would run into on attempting to go into the cost. If the question of cost of these services would be considered material I think that the court would have the right to pass on that question. For instance the salary Mr. Rodes gets, and I don't know what salary Mr. Rhodes gets, it might be embarrassing to Mr. Rhodes — state because it might be more than he thinks he ought to have. The court in one case might feel that the expenses were too great, and in another case he might think they were re-sonable or another case he would feel they were less. To begin inquiry in any one case would be in a collateral way to set up an investigation that as I see it in the first place would be immaterial, and in the second place lead to investigations in 28 different states and 47

different tribunals attempting to fix the salary of Mr. Rhodes or any other man working in that department. As Mr. Rhodes has stated, the evidence in a case in Missouri showed that the cost of the services in a case in Missouri showed that the cost of the services for that year were about 92 per cent of the $4\frac{1}{2}$ per cent income but as I see it that would be immaterial whether it was 92 per cent or 72 per cent of 108 per cent. The relation is such that the associated company can cardly do without it. The one matter that Mr. Rhodes has not mentioned here, the financial services, is worth more at this particular time than the entire amount that is being paid. Take the new money that the Southwestern is obtaining and I don't mean merely for Houston because this is not merely a state proposition but a company proposition, it is the con-

tract that is made between the Southwestern Company and 553 the American Company and if any tests be applied the test that must be applied is whether or not the contract is the proper contract to be entered into between the American Company and the Southwestern Company as a whole. So that if it be advantageous to the company as a whole it as I see it could not be ignored even in the city of Houston. I believe that by the time we get through with the other testimony on the 41/2 per cent, or on the license contract as it is more properly called, that even the attorneys for the city will be convinced that this is an arrangement which we could not do without. It is an arrangement that as was intimated by a number of witnesses in some other cases that I have been in, that in a large measure explains the success of the associated companies. In other words, if the independent company could obtain these services and the financial services that the associated companies get, as well as the engineering, the legal, the financial, the accounting and the executive and other services rendered in addition to the instrument service, they would be in a position to go on and give service and stand the assaults that are made upon the companies to a very much better advantage. They would be able to do business in a broader way and a great many times go on just like Houston has been able to go on the last two or three years. While there has been a falling off in the revenue here because of the fact that the exchange in Houston is owned by the company that is operating throughout the entire state the exchange has not had to close or to into the hands of the receiver even though it has been operated at a loss. Of course that can't go on forever

and the time has come, as witnessed by this law suit, when we have to have relief and that comes in various forms and I believe a further investigation of this will convince your honor that the services are worth the money that we are paying for it and

that is the main thing we are contending before the court.

Judge Powell: If the honor please I am not going to make any extended reply to the remarks of counsel, except to say that I have not so much fault to find with the services performed for this 4½ per cent. My thoughts run along this line: Here is a corporation, The American Telephone & Telegraph Company, which is an organization and is doing business in many stated, its own business.

Now then instead of taking out a permit to do business in Texas as the American Telephone & Telegraph Company, which it could have done, just as well as organizing a new company and having it take out a permit to do business in Texas if the American Telephone & Telegraph Company had done that and operated this plant here directly instead of indirectly, then the profits it makes from any kind of contract it has will be part of this income, as for instance the Houston plant, and I don't feel that they ought to be permitted to get dividends or returns by license contracts through its manufacturing branch, the Western Electric Company and other ways by organizing subsidiary concerns and charging them for it. In other words as a matter of substance, the American Telephone & Telegraph Company is doing business in Texas now and whether we can sustain that as a matter of law, as a matter of fact in sound equity and principal, it is doing business and we

per cent and every other kind of thing to see what they are really making in Houston. In other words if you are making money in some other way, why you ought not to make any further dividends on the investment here. It looks like to me it is in a sense the organization of associated companies for the purpose of making contracts like this for the purpose of making money when the American Telephone & Telegraph Company could take out a Telephone & Telegraph Company and have one concern and one outfit all along the line. That is the way we are thinking.

Mr. D. A. Frank: The evidence in this case shows that the Southwestern was doing business in this state long before ever the American Telephone & Telegraph Company secured control of its stock. In other words the Southwestern was here first. Now if you wanted to re-organize the American Telephone & Telegraph Company and tell those people how to run that business, I suppose you might say to them that owning a majority of the stock of the Southwestern Exchange Company, you kill the Southwestern Company and go into the local business, but the American Telephone and Telegraph Company dosen't do any local business in the United States, hasn't a single exchange in the United States, it has nothing but long distance business. Now the total payment by the Southwestern Company according to the evidence was \$48,503.00. Mr. Rhodes has testified that the instrument service on the conservative basis he has put it, is approximately on each station 93 cents. That

would be just roughly, \$28,000.00. That would leave \$16,500.00 for all the other services. Now that would be the only amount that you would question if any at all and if the evidence in this case should be that the cost was 90 per cent of it as it was in another case, that would eliminate 90 per cent of the Sixteen Thousand and would leave in the case only about One Thousand Six Hundred Dollars. So that the dispute in this case would be hardly material. It would be hardly worth while—

Judge Powell (interrupting): Yes, if the court would conclude

that our local engineer and other people could not take care of the situation.

Mr. D. A. Frank: Weil of course they could not, if you would

just think about the work that is being done.

The Master: Your contention is that the work of the local engineer is not in any sense duplicated by Mr. Rhodes or his department?

Mr. D. A. Frank: Absolutely is. I understand you will not hold any further sessions this week. Mr. Pennell, our next witness, is our chief engineer and he will tell from his standpoint what the 4½ per cent service is worth to his company, and you will be able to find out from him just how his organization is prepared to make the general investigations that are being made by the general staff. There is not in any sense a duplication of effort at all and knowing as I do from personal observation the work done by both departments, I

557 know it is absolutely impossible for the work to be done by
Mr. Pennell and his staff. He has not get a staff trained
along that line, he hasn't got the laboratory and he hasn't got the

money to do the work.

558 ROBERT F. ESTABROOK, called as a witness by the complainant and after being duly sworn, testified as follows:

Direct examination.

(Questions by Mr. J. D. Frank:)

My name is Robert F. Estabrook, and I live in Glenridge, New Jersey. My place of business is in New York; I am a Traffic Engineer employed by the American Telephone and Telegraph Company and my office is in New York, 195 Broadway. I have been connected with the American Telephone and Telegraph Company since 1902—the summer.

With reference to my Telephone and Telegraph experience, I started out, upon graduating from school in 1902, and was employed at Pittsburgh under the direction of one of their engineers who was out there helping the Pittsburg Company in Traffic problems. I was transferred to that Company's pay-roll after several weeks, and stayed there four years, when I was made Traffic Superintendent of the Northwestern Telephone Exchange Company, at Minneapolis, and remained there until 1909 and was then transferred to the American Company, at New York, and have been there ever since. That was in the Traffic Department of the Engineering Department.

I graduated from Dartmouth College in 1902.

With reference to the word "Traffic" as applied to the telephone business, I will say, that in the operation of a telephone company, there are three main departments; the Plant Department, that constructs and operates the plant; the Commercial
Department, which has the business relations with the public, and
the Traffic Department, that, to a large extent, is responsible for
giving the service. It operates the switch-boards and provides the
service to the public. Now, in the Engineering Department of the

American Company, the same distinction is followed, of the Plant Engineers, Commercial Engineers and Traffic Engineers. The Traffic Engineers on the General Staff in New York work on the problems met by the Traffic Departments of the Associated Companies throughout the field.

The American Telegraph and Telephone Company maintains a staff of Traffic Engineers; it maintains a staff of about forty Traffic Engineers in the Engineering Department to work upon these prob-

lems-traffic problems.

The Associated Companies, such as the Southwestern Telephone and Telegraph Company, also maintain their own staffs of Traffic Engineers; every Associated Company has a staff of traffic engineers of its own. The Southwestern Company have a small staff of Traffic

Engineers in St. Louis, and they have a small staff of Traffic Engineers on the staff of the General Superintendent of Traffic

in Dallas.

With reference to the difference between the functions of the Associated Companies' Traffic Engineers and the Traffic Engineers upon the General Staff of the American Telegraph and Telephone Company, the work of the traffic engineers' staff of the American Telegraph and Telephone Company is confined to the work of the development of switchboards, the development of equipment improvement, development and improvement of methods for operating the switchboards and the study of methods for handling the operating service—in fact, all questions of a general nature that have to do with the giving of telephone service throughout the country.

The General Staff works on general problems and also on specific problems, which may be put up to them by any one of the Associated Companies that want their advice or suggestions, and to find out if anyone has been up against the same problems elsewhere; and the work of the Traffic Engineers of the Associated Companies largely has application to specific cases of the equipment which has been designed, and the development of different methods or operating dif-

ferent kinds of equipment—general studies of their own 561 specific problems as they arise there, while that of the General Staff relates principally to development and research

work.

Q. Do the Traffic Engineers of the Associated Companies do any

development or research work?

A. They frequently start something,—have some good idea, and that idea may be put up to the General Staff, but the problem of the development and study will almost always be carried on by the General Staff rather than by the Staff of the Associated Company.

Q. Now, this arrangement of the Traffic Engineering Staffs, both of the Associated Companies and the General Staff of the engineering Department of the American Company, does that mean that

there is unnecessary duplication of work between the two?

A. No, I think the arrangement tends to avoid duplication of work because if the general development work was to be undertaken by any one of the Associated Companies, of course, it would be carried on simultaneously in a number of places all over the country, but

by referring these general problems to one headquarters they are studied there by the man who specializes on that work. We have the advantage of the knowledge of what has been done in other ter-

ritories, and that arrangement undoubtedly results in a better job being done and in an avoidance of duplication.

562 Q. The work done by the General Staff is done on a larger

scale, then?

A. Yes, in many cases viere one company—it would not be big enough to warrant going into very extensively, but for all the companies it may be a considerable problem and well worth careful investigation.

Q. You have referred to the work done by the General Staff Engineers in the development of the switchboards. I wish you would

take up and describe some of that work.

A. It will help to explain some of the terms and give you an idea of what I am going to talk about to look at some photographs.

Q. (Interrupting.) Have you several copies of these photo-

graphs?

A. Yes.
Q. What is the first photograph?
A. The first photograph is a photograph of what is called a "Number One Common Battery Relay Switchboard."

Mr. J. D. Frank: We offer that in evidence as "Plaintiff's Exhibit No. 122."

(The photograph was thereupon received in evidence marked Plaintiff's Exhibit No. 122" Witness Estabrook and is filed 563

A. The portion shown in the photograph is only a small section of the total board, and starts with position "26" and runs down to about position "34." Now, that is the type of switchboard at which subscribers' calls originate.

(By Mr. J. D. Frank:)

Q. That is, local calls? A. Well, local calls. The call originates, and may be either a local or a trunked call; it depends upon the destination of the call, of course, and the size of the city.

Q. Now, by "trunked" calls, you mean one which originates in

one exchange and destined for one in another exchange?

A. Yes; and the second photograph, which I am going to show is a photograph of what is called an "Incoming Trunk Switchboard."

Mr. J. D. Frank: We offer that as "Plaintiff's Exhibit No. 123."

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 123, Witness Estabrook" and is filed herewith.)

A, Through which calls are completed, that is, incoming from another office in the same city.

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564 Q. Now, by another office, you mean another exchange

A. Another one of the offices that make up the exchange where there are several in that office.

Q. For example, a call from Preston to Capitol?

A. Requires the use, not only of the "A" switchboard, but also of this second type of board which is called a "B" switchboard. Now, turning back to the first photograph. I wish now to explain what

some of the things are that you see.

The positions that are printed on the board are the position numbers, that is, the numbers of the positions at which the operators sit, and an operator sits below each one of these figures, directly below the figures, and under figures 27, 28 and 29, appears what is called a section of the multiple. Now, the multiple is, in this case, consisting of 8,000 subscribers' multiple jacks; that is, in that section, under these three positions appear all of the 8,000 lines that receive their service in this particular exchange. You will notice just to the right of position 27, and to the left of position 29 a white line, which is painted down across the multiple on a little narrow strip of wood that divides the different banks, as they are called,—the jacks—the 8,000 lines, appear between those two white painted strips.

Q. Now, can one operator reach any one of those numbers? A. The size of the multiple—where those 8,000 lines appear has been carefully figured out, so that it is within reach of any-

one of the trhree girls that sit on that position. That section of the multiple is within reach of the girl that sits on position 28. Now, the operator who sits on position 27 reaches two-thirds of that multiple there, directly in front of her, on position 27, or one position to the left, on position 28. The remaining part of the multiple appears numbered position "29"; she reaches that, position 26,—in other words, in every three positions the whole multiple is repeated; that is, the reason it is called a "multiple" as every operator can reach every line in the exchange, either on the multiple directly in front of her, or to the left or right.

Q. That is, ring any number?

A. She can plug in and ring that line. Now, below the multiple appear about six lines of additional jacks, as they are called, which constitute the "trunk multiple." Now, the trunk multiple are the surplus which are used to reach other offices in the same exchange. Those are used where the call is not completed in the same exchange,

where it originates. Below that appear the answering jacks and line lamps, where the calls originate and are answered. 566

Now, each subscribers' line terminates on a jack, and right below that jack is a little electric lamp which burns when you take a telephone off the board. Just one thing more, and then I will pass on and go into the details. The equipment required for the use of the operator appears right below the answering jacks on the horizontal key shelf, and that consists of the flexible cords with which she answers the light which is calling and makes the connection either to the multiple, if it is a local call, or out-going trunked multiple if it is a distant office call. Then these cords are at the back of the position right up against the face of the switchboard, and in front of them, are the keys which the operator uses in order to connect her set to the call and in order to ring the called

Now, turn to the second photograph. This is a "B" switchboard. or trunk switchboard, in the same office, used for the completion of the incoming calls. There again the multiple appears, and below the multiple are the incoming trunks from other offices, which the operator uses to complete the connections from the distant office to the subscribers in the office concerned.

Mr. Duls: I notice right in front of that picture six of those 567 jacks. What are they for, in the center there? (Indicating.) A. Are you referring to the second photograph, or the first one?

Mr. Duls: Number 123,—one of those jacks.

A. Which jacks are you referring to? These are where the telephone operator who sits in the position makes connection to the position. I am going to get into some of these things a little later. Now, I want to show a diagram which shows a local multiple connection. I don't think it will take any explanation of this diagram.

Mr. J. D. Frank: We offer the diagram in evidence as "Plaintiff's Exhibit No. 124".

(The diagram was thereupon received in evidence, marked "Plaintiff's Exhibit No. 124, witness Estabrook", and is filed herewith.)

A. Now, that diagram represents any one of the positions you might have selected on the first photograph shown, enlarged and simplified, and shows how a connection to a subscriber in the same office is completed. To the left is shown the calling telephone and the line, omitting a great deal of apparatus intervening, brings

the signal in front of the operator; then the cord is shown which the operator has used to answer that signal. The set 568 over which the operator talks is shwon hanging down from the jacks used to connect her set with the position, and the dotted

lines indicate ordinarily the way in which she is connected.

Now, another cord, the other one of the pair which the operator must always use in completing her connection, is shown connecting to a multiple jack, 1775, I guess it is, yes, 1775 up in the multiple, and then an extension of that connection is indicated to the called telephone.

That is just as outline of the way in which a local connection is

made.

Now, on another diagram which I want to show, a more complicated situation is shown-where a call originates in one office and is completed in another office.

(By Mr. J. D. Frank:)

Q. Now, that's a diagram of a call circuit trunk connection, is it?

A. Yes.

Mr. J. D. Frank: We offer that in evidence as "Plaintiff's Exhibit No. 125."

(The diagram was thereupon received in evidence, marked "Plaintiff's Exhibit No. 125, Witness Estabrook", and is filed herewith.)

A. This diagram shows how the use of two different types of switchboard and of two operators is required when a call originating in one office is completed in another office. At the left, as before, is shown the calling telephone appearing on the position the signal for which appears in "A" position and with the connection put up just as in the preceding diagram, except at this time the calling board is connected with the outgoing trunk, as it is called. Now, the method by which the connection is secured is as follows: After the operator at the "A" position has received from the subscriber the number that he wants, she depresses a button on the left of her position, and you can trace it back from the words "Xall Circuit", the dotted lines to the button that she pushes. This button is connected with the call circuit directly to the telephone set and the ear of the "B" operator is in the distant office. She tells that "A" operator then assigns the call circuit trunk. Right above the words

"Call Circuit" on this diagram appears the words "Call Circuit Trunk". That call circuit trunk extends from the outgoing trunk multiple jack to the distant office and to the trunk "B" operator in that office has assigned and has connected to the number wanted appearing tin the "B" multiple in that distant office, and of course, from that "B" multiple there is direct connection to the telephone of the subscriber who is called. Now, in handling every call originating in one office and terminating in

another office, the services of two operators are required.

Mr. Howard: Mr. Frank, this seems to have taken on the aspect of a lecture on telephone operating and at least is very interesting, but the ultimate thing that we are here to learn about is not the mechanism of the telephone. Personally, to me, I care so little about these scientific things that they are not even fairly interesting. Now, this is a long drawn out thing, and what is the purpose of going into all of these details of mechanics in a lecture on a matter that we know is a small thing,—a small article? The most of us are not scientists, and, to be frank about it, I haven't the scientific intelligence to follow the gentleman with any great degree of pleasure. I believe this is offered with reference to the articles furnished

to the local company by the American Telegraph and Tele-571 phone Company with a view of justifying the charge of four anf a half per cent which they take from the gross earnings

each year.

Mr. J. D. Frank: Yes, sir.

Mr. Howard: Why can't we get right down to that and have this

gentleman tell us what they are?

Mr. J. D. Frank: That's just exactly what he is doing. I expect to show what parts we have here now and expect to show what the de-

velopment has been and that this development has been brought about under this four and a half per cent arrangement here.

Mr. D. A. Frank: And this testimony is going to be very short,

too.

Mr. Howard: If that's true, why, al-right.

Q. Will you continue, Mr. Estabrook?

A. I finish with the use of these diagrams. There is one other photograph that I would like to show which is a photograph of the back of an "A" switchboard, the same shown in the first photograph, and that simply shows the cabling through which the wires that constitute the multiple are carried.

Mr. J. D. Frank: We offer that as "Plaintiff's Exhibit No. 572 126."

(The photograph was thereupon received in evidence, marked "Plaintiff's Exhibit No. 126, Witness Estabrook," and filed herewith.)

A. Looking at that photograph there are 400 cables shown as white scripts at the top of the photograph containing about 25,000 wires; and below these cables are-appear the attachments of the cords used by the operator, and some of the relays and other apparatus used in giving the operator the signal and showing the condition of the connection.

(By Mr. J. D. Frank:)

Q. Now, as I understand it, this shows how the wires enter in the back of this "A" board, -how they are brought in there?

A. Yes.

Q. Do these photographs represent the backs of switchboards now in use in Houston?

A. Yes, these photographs show the type of switchboards em-

ployed in the Houston Office.

Q. Are these the same type of boards that have been used in Houston since the sonctruction of this exchange here, Mr. Estabrook?

A. No, the present boards are a matter of development

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from many earlier and less efficient types.

Q. Now, has there been a steady process of improvement in the development of these modern switchboards such as are installed at Houston, and were these modern switchboards preceded

by other and less efficient types?

A. Yes, the earliest types were very different. One of the first types was known as a "Magneto Transfer." board and had a shuttle, or drop, which was thrown when the subscriber turned the crank, and the boards were of small capacity, were satisfactory and still are for exchanges in small cities, but they are absolutely inadequate for large cities; in fact telephone service couldn't be given today in large cities unless the modern boards had been developed. These first magneto boards were followed by what is known as a "Series Multiple Switchboard". These boards gave service up to a capacity of about 3,600 lines. The fact that they had a multiple by which an operator could get direct connection with more lines than would appear directly upon her position led to much quicker and more accurate service. That board is about ten or fifteen per cent more efficient than the preceding type. That was followed by a "3 General Standard Branch Terminal" board, which had a number of improvements that reduced the operators' work, time, and increased the possible size of the multiple, and reduced the necessity for trunk-

ing between exchanges. These boards in turn were followed by the first types of the present modern No. 1 "Relay" board, which had a common battery line signal, or lamp, indicating when the subscriber was called, and which had an automatic signal showing the status of every connection, so that the operator knew by a visible signal rather than by listening, what the condition was. These boards which preceded them, and so you will see there has been a steady increase in the efficiency of switchboards during the time that this development has been in progress.

Q. Now, have there been any subsequent improvements in the

No. 1 relay switchboard since it was first developed?

A. Well, since that board has been developed there have been no radical changes in the past, but there have been improvements in practically all the equipment employed in it, and the arrangements that have led to a further very material improvement in the service and the operating efficiency. It is necessary to say something, I think, about what is involved in switchboard operating. The time spent by an operator in handling a signal call is only about ten seconds, but that time is not spent in doing any one or two things, but is spent in ten to fifteen different operations that an operator has to perform in handling an ordinary telephone connection.

Q. You say the average time spent in handling a call is

575 ten seconds? seconds?

A. The average time spent by the operator in handling a signal call is about ten seconds; it depends upon the class of service and the distribution as between the different classes of service in the exchange, but that's about the average time for a local connection.

Mr. Howard: Ten seconds?

A. Ten seconds.

Mr. Howard: Do you call that good service?

A. That's not the operator's time in answering it. After the call has been answered there is still work to do. That's the working time I am talking about.

Mr. Howard: Oh, I see.

A. No, the biggest single item of expense in giving telephone service is the traffic department payroll, which is largely the cost of the operators' wages. The total traffic departmet payroll for the Bell System last year was around one hundred and eight million dollars, and of that amount about eighty-six million dollars was expended for the wages of the operators; so that the matter of having efficient methods is very important in the Bell System.

576 Another big item of investment of all exchanges is the in-

vestment in central office equipment, which is largely controlled by the efficiency of the operating methods. The investment in central offive equipment at the end of last year was about one hundred and eighty-one million dollars throughout the System. The operating efficiency, because it controls the size of the switchboards, also has a reaction upon the amount of the building investment. All of these things make it very important, of course, to do anything which will increase the operating efficiency, if that can be secured, by improvements in the equipment, or methods of operating. Now, since the first relay switchboards were designed, why, as I stated before, there hasn't been any radical change in the design of the board; there have been changes in all parts of the equipment; nearly everything has been improved in some minor way.

(By Mr. J. D. Frank:)

Q. Now, will you give us an idea of some of these improvements, and explain their importance?

A. I want to do this by using this drawing of an "A" position-

Mr. J. D. Frank (interrupting): I offer that in evidence as "Plaintiff's Exhibit No. 127."

577 (The drawing was thereupon received in evidence, marked "Plaintiff's Exhibit No. 127, Witness Estabrook" and is filed herewith.)

A.—on which the different parts of the equipment are labeled. Beginning at the top of that diagram is shown the subscribers' multiple. Now, the earliest boards of No. 1 relay type had a capacity for 4,800 lines in the subscribers' multiples; that capacity, by improvements in the jacks, consisting of reduction in their size, has been increased to 9,600 jacks. The increase in the size of the multiples makes it necessary to do less trunking, and so your service improves.

Q. You speak of these improvements,—who made these improve-

ments; -how were they brought about?

A. They were brought about—made by the General Staff Engineers, in collaboration with the manufacturers who, of course, made the equipment; but it is the development of the General Staff Engineers that I am talking about.

Q. That is of the American Telegraph and Telephone Company?

A. Yes, sir.

Q. Al-right, go ahead with your explanation.

A. Below the subscribers' multiple appears the out-trunk multiple as built now. Since the board was first developed there has been a very important change made in the circuit coupled with the outgoing trunks. The original circuit required to the distribution of the circuit coupled with the outgoing trunks.

outgoing trunks. The original circuit required that the incoming trunk operator at the distant office should herself ring the called station every time that a connection was requested until that called station answered or the call was abandoned. This trunk circuit was improved so that the ringing which was formerly done by

the operator is now done by a machine; that improvement not only saved the time of the operator but improved the service because the ringing is done by the machine more accurately than by the operator, and for the amount of traffic handled by that method in Houston there is a saving in the time of the operators that is worth about \$14,000.00 a year in operators' time saved, when equated to a money value, and is about \$4,000.00 a year more in the smaller number of "B" positions required.

Q. That is figured out as to how long it took to handle a call under the old system and how long it takes to handle a call under this

system?

A. Yes, the corresponding loads for the old manual method and the machine ringing method have been carefully determined and that estimate is based upon the difference in the work of the operator involved. Of course, the subscribers' answering jacks and the line lamps—there have been many improvements in the details; they

have better lamps and opals and more reliable relays. Below them we have what we call the kep shelves themselves, the cords used by the operators in answering calls and making

connections.

Q. Have any improvements been made in the cords?

A. Yes, that is, one of the examples where a little bit of improvement in the telephone business, which is simply a sequence in the accumulation of lots of little things, and becomes very important. Now, the early type of cord used was a steel cord and was very stiff, and the arrangement for returning the cord in place after it was used was very cumbersome. The engineers went over the problem of getting better cord; they wanted to get a cord that carried a longer load and was cheaper and more efficient, and after a lot of trials succeeded in producing a cord which had these improvements. The present cord we figure saves an operator about a second of her working time, in every connection, and about half a second on a trunk call on the board of the "B" operator, and for the traffic handled daily in Houston that simple saving amounts to pretty nearly 76 hours of the operators' time, and at the cost of operating labor in Houston, that amounts to pretty nearly \$10,000.00 a year. About one-third of the operators' time is saved in just handling cords, just putting them up and taking them down.

Mr. Howard: Has the Bell System any exclusive rights on this

little improvement?

A. Why, these particular cords are made by the Western Electric Company. No, I don't know that they have any exclusive rights to them.

(By Mr. J. D. Frank:)

Q. But these cords have been developed-

A. (Interrupting.) These cords were developed by the American Company and we think they are very superior to any other cord on the market. Other cords made by other manufacturers have been tried but we don't think they came up to this cord.

Q. Now, in making these improvements, Mr. Estabrook, you have

due regard to what it is going to cost to use that particular equipment as well as the time saved, do you? In other words, you try to effect economy in applying the new material as well as improving-

A. (Interrupting.) There are always two points in view,-of course, to handle the work more efficiently and economically, and to

give better service; those are the two cardinal things.

Q. Al- right. Is there anything else you have to sav on that? A. Why, the same thing as to all other parts of the apparatus.

I don't think it is necessary to enumerate them.

Q. Now, how are the Associated Companies kept informed of this work on switchboard development and other work done by the Traffic Engineers on the General Staff, and how do they get

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A. There is a constant stream of correspondence between the engineers of the Associated Companies, and the engineers of the General Staff in which they ask for advice or tell us of some of their The Traffic officials frequently visit and consult the negineers in New York and the New York engineers visit the people in the field, and finally the matters relating to switchboard equip-ment, engineering matters, are sent out to them in the shape of circular letters, descriptive of the apparatus or methods and how they are to be used.

 Q. Have you any of those circular letters?
 A. Yes, I brought—on equipment matters there are about 35 letters out and I brought along two of them to show these matters. Now, the first circular is a description of one of the new type of switchboards that are employed. That's just the one "B" switchboard. It shows the conditions under which it is to be used: has information regarding all these service features and the equipment features, and tells the engineer of the Associate Company the conditions under which he wants to handle it.

Mr. J. D. Frank: We offer that as "Plaintiff's Exhibit No. 128."

(The circular was thereupon received in evidence, marked 582 "Plaintiff's Exhibit No. 128, Witness Estabrook," and filed herewith.)

A. Of course, there are a great many different circulars on different switchboards, or different pieces of equipment sent out. just illustrates one specific type of board. Now, that's our circular, which is "General Engineering Circular No. 644," is a book of instructions for the use of the Traffic Engineers of the Associated Companies, which tell them the conditions under which they want to employ all the different-in one of the different types of switchboards. This circular entitled, "Standard Traffic Engineering Practices for Local and Toll Central Office Equipments" describes briefly all the different types of switchboards, and the conditions under which they would want to be employed. It is a table showing the loads that can be handled, the amount, and from that determine the amount and quantities of the equipment; it tells the proper way in

which it should be arranged, and gives the traffic engineer very complete information that he needs in all his switchboard engineering work.

Mr. J. D. Frank: We offer that as "Plaintiff's Exhibit No. 129."

(The circular was thereupon received in evidence, marked "Plaintiff's Exhibit No. 129, Witness Estabrook" and filed herewith.)

A. Back of this circular are the thirty or more different specific circulars of which I have given one sample in the preceding exhibit.

(By Mr. J. D. Frank:)

Q. You stated your engineers go out in the field whenever they are needed and assist them in traffic problems?

A. Yes, they generally go out when they want us for any reason.

Q. Do you know whether or not any of your engineers have

visited the City of Houston and assisted the exchange here, or the State of Texas?

A. Yes, among the traffic engineers I know of about, I think, thirty-odd visits of traffic engineers to Texas cities, and about four

or five visits of engineers to the City of Houston.

Q. And then the traffic engineers for the Southwestern Company go to New York frequently and have conferences up there with reference to the traffic problems, in the State of Texas, including the City of Houston?

A. Yes, very frequently in New York, and the traffic engineers are very frequently down in this territory, usually in St. Louis, which

is the headquarters of the Southwestern System.

584 Q. Well, now, besides the work which the General Staff
Engineers have done on the improvement of switchboards,
do they work on other traffic problems for the Associated Companies?

A. Yes, besides the work done on switchboards and equipment development engineers are at work on the methods for operating.

Q. Well now, mention some some of these traffic problems that they work on?

A. Every type of switchboard has some peculiarity about it which must be met in the methods for operating that board, conditions over the country are generally very similar except as the difference in the size of the exchange on some special class of service may make some variation necessary. For that reason, the Associated Companies, a number of year- ago asked the American Company to study and standardize the operating practices that were best suited for each of the different types of equipment and that work was undertaken by the American Company about 1909. Work had been done on the subject earlier than that, when I first came into business, but by 1909 the exchange had got so big, and many of the traffic problems which when the exchanges were smaller were not serious, have become such important problems that it was felt necessary to

study the whole proposition and standardize the methods.

To do this work, the American Company took on additional

engineers; they sent their men to different states and territories to study the practices being followed by the different companies. They tried experiments and made efforts to improve the methods that were being used with considerable success. As far as any special subject was studied and a pretty definite conclusion arrived at, the matter was presented to the Associated Companies for their criticism and suggestion, and after their comments had been received, the practices were finally standardized. The standard practices were sent out just before the war and I want to offer a set of those practices as as exhibit. All of the Associated Companies, including the Southwestern, base their operating practices upon that work. In many cases, they use the subject-matter word for word and in other cases they modify it slightly for their local conditions. In all, there are about 300 different circulars which have been sent out on this subject. What I offer here covers forty.

Q. This here is local operating practices for the information and

guidance of the Central Office operating forces?

A. Yes, sir.

Mr. J. D. Frank: We will offer this in evidence as Plaintiff's Exhibit No. 130.

(The document was thereupon recived in evidence, marked "Plaintiff's Exhibit No. 130, Witness Estabrook" and filed herewith.)

Q. You know whether or not they are using this in Houston, Mr. Estabrook?

A. They are not using that verbatim, but they are using the practices.

Q. Al- right. Is there anything else you have to say on that subject?

A. No, I don't believe you wish to go into the details of the practices themselves.

Q. No, we will let the subject speak for itself. No, do you give the Associated Companies any advice or assistance with reference to the training of operators and the methods of handling their training schools?

A. Yes, the practices that have just been put in cover the methods which have been studied and standards found best suited for handling every type of equipment and different classes of service. Now, for use in training operators, the general staff has also prepared the instructions shown in this Traffic Circular No. 113.

Mr. J. D. Frank: We offer that as Plaintiff's Exhibit No. 131.

(The document was thereupon received in evidence, marked "Plaintiff's Exhibit No. 131, Witness Estabrook" and filed herewith.)

A. All of the Associated Companies, of course, have maintained schools for training new employees. There are very large numbers of new employees taken on each year. Dur-

ing the war this condition was particularly—this problem became particularly important because on account of the labor unrest, there was a big turn-over in the force, last year as many as 8,000 new operators had to be trained and taken into the Bell System and the basis for their training is this local operating text book.

Q. Is the matter of the original training of these operators of any

considerable importance, Mr. Estabrook?

A. Of course the training of the operator is a matter of very great importance because the equipment is designed and the whole system set up to be operated along certain defined lines and every new employee taken on must be taught her duties and the way in which the details of the operating work are to be carried on, or there is an immediate and serious reaction on the service.

Q. Now, do the telephone companies carefully work out the system of traffic records for studying the service and traffic results?

A. Yes, it would be impossible to handle the telephone business and the Traffic Department's part of the work efficiently or intelligently without adequate records of what is being handled. Those records are needed for all purposes or engineering, in order to estimate growth, to estimate the switch-board, wires and trunks that are going to be needed, also to estimate the size of the forces that

are to be required, and finally, of course, for determining 588 the efficiency with which the work is being done and the

quality of the service being rendered. In order to handle this problem most satisfactorily, standard sets of forms and records have been prepared by the American engineers, which are used by all of the Associated Companies in determining what their results are.

Q. Well, take up and mention some of these records and sets

that are made.

A. Well, I want to offer one set of the circulars, Traffic Circulars, 26, 27, 28 and 29, which describe the local and toll peg counts, as they are called. These peg counts are the record of the traffic handled at the switch boards, they are the basis of all engineering and for all studies of operating costs.

Mr. J. D. Frank: Now, this Traffic Circular No. 26, Local Peg Counts, we offer as Plaintiff's Exhibit No. 132. It is all included in here, 26, 27, 28 and 29. We offer that as Plaintiff's Exhibit No. 132.

(The document was thereupon received in evidence marked, "Plaintiff's Exhibit No. 132, Witness Estabrook", and is filed herewith.)

Q. Al- right, now go ahead.

A. There are about 50 different traffic forms which are also needed

to completely cover the operations of the Companies.

Q. Well now, Mr. Estabrook, what do you mean by "peg 589 counts", "local peg counts" and why is it necessary to have any such thing as that? Of what benefit is it to the local company to make a study of that kind?

A. Well, the "peg count" is a record of the traffic handled. It is the basis on which all the future requirements in equipment, in location and size of buildings, and trunks between offices and the number of employees that are going to be required, the size of their quarters, everything that has to do with the growth of the plant pretty nearly is fundamentally dependent upon the growth in the traffic, and the peg count is a record of the amount of traffic classified into the different kinds of service and different kinds of stations, containing information as to the loads that are handled, and it is the basis of our comparisons of efficiency that are made.

Q. Are those peg counts taken frequently?

A. The peg count is taken on two days of each month.

Q. Now, are similar peg counts taken in connection with the

operation of the toll boards?

A. Yes, the same general form of record is kept of toll traffic as is kept of local traffic and it is used for the same general purposes.

Q. Now, is that all you had to say with reference to that now?

A. Yes.

Q. Do the American engineers assist the Associated Companies further than the application of these traffic records?—in matters of direct management?

A. Yes, work of that nature has always been done upon 590 request of the Associated Companies. The engineers visit them and help them upon matters of organization for their central office force on service problems that come up. One example of that work is work that has been done in the matter of what we call "force adjustment", the providing of an edequate operating force for central office is a very complicated problem, to do the work efficiently, because the requirements throughout the day are constantly changing from hour to hour. Every exchange has a typical traffic curve, as we call it. The business is, of course, light in the morning, comes on heavy during certain forenoon hours, falls off again at noon, may become fairly heavy again in the afternoon. and becomes light during the evening. Of course, telephone work is 24 hours a day and 365 days a year, and the problem is to provide the required force at every hour of the day and night and not have an excess force at any time or an inadequate force. back as 1907, one of the engineers of the American Company went pretty nearly all over the country studying this problem and upon his return, his investigation was written up and new method of handling that problem developed and submitted to the Associated Companies in a circular letter. It was found that in many places the methods employed were not adequate or giving satisfactory re-I would like to read a paragraph from the circular letter, it says, on page a: "Even if the average saving, however, should be much less than that shown in the particular offices considered, the total amount involved will still be large. From the data at 591

591 total amount involved will still be large. From the data at hand, I should estimate that the total possible saving in all the Bell Companies might equal nearly a million dollars a year." From that time on, the subject has been constantly studied,

and the latest circular on that subject is Traffic Circular No. 117, on "Adjustment of Force." This circular goes very carefully into the highly technical methods that must be employed in order to get an economical adjustment on the forces.

Q. Have you several copies of that circular?

A. Yes.

Mr. J. D. Frank: First, let's offer in evidence that circular form from which you read there. We offer that as Plaintiff's Exhibit No. 133, I believe, and then we will offer in evidence the circular on Adjustment of Force, as Plaintiff's Exhibit No. 134.

(The documents referred to were thereupon received in evidence, marked respectively "Plaintiff's Exhibit No. 133, Witness Estabrook", and "Plaintiff's Exhibit No. 134, Witness Estabrook" and filed herewith.)

A. The result of the use of those improved methods is saving many millions of dollars a year throughout the Bell System.

Q. Is that all you have to say on that subject?

A. Yes.

Q. Now, Mr. Estabrook up to this time, the work you have been describing all has reference to local operating and service problems in connection with the operation of local exchanges, has it not?

A. Yes, almost entirely.

Q. Now, has similar work been done on toll traffic problems by the

general staff?

A. Well, while not as large a force has been employed on toll problems as on local problems, some work has been done on all the toll problems. Special switch-board equipment, of course, has to be designed and employed for handling the toll service. In the last dozen years the toll switch-boards have been re-designed and it has been found an advantage to have special types of toll equipment for special methods and special kinds of service. That work has been done by the American Company engineers. Work has also been done on the development of the toll operating methods, and the result of this work has been that both the service has been improved and the cost of giving the services,—the operating portions of the cost have been simultaneously decreased. The operating practices which are employed throughout the system are incorporated in another practice circular which I have copies of.

Q. You have several copies of that?

A. Yes, sir.

Mr. J. D. Frank: We will offer that as Plaintiff's Exhibit No. 135.

(The document was thereupon received in evidence, marked "Plaintiff's Exhibit No. 135, Witness Estabrook" and filed herewith.)

Q. Mr. Estabrook, do you know of any charge, other than the 4½ per cent payment for certain receipts for the services that are rendered by the American Telephone & Telegraph Company?

A. No. I don't.

Q. Mr. Estabrook, one of the witnesses for the City in this case has testified that the traffic expense- for the City of Houston are excessive, the calling rate is not as great as it should be upon the part of the local operators. Have you made any study of the conditions in other cities of practically the same size of the City of Houston with reference to those matters?

A. Yes, I have looked over the December Traffic Reports for a group of 16 of the Bell cities, which included the seven cities throughout the country that were next larger in size of stations, and six cities that are next smaller, so it is a group of fairly com-

parable cities.

Q. Now, will you mention those cities before you start in to ex-

plain the result of that study?

A. No, I haven't got them. The cities were Providence, Oakland, Cal., Fort Worth, Newark, Jersey City, Oklahoma City, Columbus, Syracuse, Houston, Nashville, Memphis, Des Moines, Dallas and San Antonio.

Q. Now, what was the result of your investigation?

A. That out of those cities, six of them showed that the traffic cost per thousand units, which is the basis of comparison which we

ordinarily use, that six of those cities, the cost were lower and 594 that six of the cities they were higher, and one showed the same cost.

Q. What was that one, do you know?

A. Let's see. It was Dallas.

Q. Dallas, Al- right, go ahead. What else was shown by your study?

A. In those stations, of course, the cost per thousand units is largely dependant upon the loads handled by the operators, and six of those cities handled slightly higher loads and seven of them handled slightly lower loads. Now, the cost, of course, depends upon the wage rates paid employees and three of the cities paid slightly higher wages and one practically the same, and none slightly less wages.

Q. That is, wages to operators?

A. Wages to operators is what I was talking about, yes. Q. All right, in the matter of service, the line signals?

A. Four cities showed a quicker answer and nine showed a slower answer, and in the matter of errors four of them fewer erro-s, two of them showed practically the same, and seven showed greater errors. In other words, Houston seemed to be a pretty average situation in so far as traffic results are concerned.

Q. Both as to traffic expense and to the service which is being

rendered and the efficiency of that service?

A. Yes.

Cross-examination.

595 (Questions by Mr. Howard:)

Q. Mr. Estabrook, what are the functions of the American Telephone and Telegraph Company?

A. What are what?

Q. What are the functions of the American Telephone and Tele-

graph Company,—what business does it conduct?

A. The American Telephone and Telegraph Company, so far as my knowledge extends, operates certain long distance lines connecting various companies and it has an interest owns a majority of the stock of most of the Associated Companies which are giving the local service in different territories.

Q. Headquarters in New York City? A. Headquarters in New York City.

Q. They are engaged largely as a consulting engineering com-

pany?

A. The Engineering Department of the American Company certainly acts in a consulting capacity for the various Associated Companies.

Q. How many engineers are attached to its staff?

A. The engineering staff consists of about a little less than three hundred people. There is also the Development and Research branch, that I think has something under 200 people. I don't carry that figure in mine. Now, of the slightly under 300 people in the engineering staff, there are 150 that rank as engineers, then there are clerks, stenographers, and draftsmen.

Q. Do you know anything about the average salary of enginners?

A. No, I haven't any-

Q. (Interrupting.) In other words, you have made no 596 investigation and no study to tell what the cost of the service rendered to Associated Companies by the American Telephone & Telegraph Company is?

A. Well, of course the salaries of the engineers would only be

part of the expense.

Q. I understand.

A. But I have never made such a study, no.

Q. You couldn't have arrived at the cost without making a study of those details, could you?

A. No, sir.

Q. Then you are not here to give us any information at all upon what the cost of the service is that you furnish to the Houston Exchange?

A. No. Q. You can't do that? A. I couldn't do that.

Q. You are only here to tell us in a general way that the American Telephone and Telegraph Company performs a good deal of services for a great number of exchanges and long distance toll lines and manufactureries throughout the country?

A. That is practically what I have been doing.

Q. That is what you are here to do?

A. Describing the work that the traffic engineers do in a general way for the Associated Companies.

Q. You can tell it in a general way only, and do not undertake

and will not undertake to say even approximately in dollars 597 and cents what the services are they render? Or what it costs them to render it?

A. I couldn't say what it costs them to render, I don't know.

Q. Or you couldn't tell even approximately the financial benefit derived by this particular exchange for any year?

A. I know that the service is of very great value because all the

telephone development largely comes through that.

Q. It is of very great value and that is the sum of your testimony. You come here and tell us that it is a very valuable organization, efficient in its functioning, and that you know it does render services of value to the Associated Companies?

A. Yes, sir, I know that.

Q. And that's all you do know Mr. Estabrook?

A. Well, I know that,

Q. Well, I mean, that's all you knew, I don't mean that is all you know in your technical or professional sense. I don't mean to say that is the limit of your intelligence, but I mean to say that is all that you can tell us that bears directly upon the issue at hand to enable us to find out how much benefit you are giving us down here.

A. I can only tell you the work that we do.

Q. Approximately yes. It is the work that you do in a general Now, Mr. Estabrook, you have detailed here in a rather scho-arly, and to a scientific mind, I suppose, rather an interesting way, some of the details of the operating mechanism of a switch-

board, and of conducting calls and this communication that

goes on here among the people of this city, you don't claim, I take it, that the American Telephone & Telegraph Company has any monopoly upon that knowledge, the things that you have detailed here about the jacks and the plugs and trunking of calls and all this mechanism is something that is rather an open book to scientific men of this day throughout the country, isn't it?

A. Why there are a great many people outside of the Bell System

that know something about telephone operating costs.

Q. A great many people that know it?

A. But I don't think there is any place where you could go to get

the same information.

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Q. In other words, you are the largest and best organization and employ more men than any other organization, but the matter of the mechanism, while it is not known to me and might not be known to Judge Powell here and might not be known to thousands, is an open book and an established fact to men in the telephone world and in the engineering world, are they not?

A. No, I don't think that is true to a very large extent.

Q. Well, there is nothing, to a scientist, or a specialist, properly speaking, there is nothing mysterious about the mechanism of this exchange downstairs or upstairs, is there?

A. That is true, but I can give you this illustration. Every few months, for instance, not every few months, but every year or so,

we have visits from engineers, and we find that their methods 599 while they are using very much the same equipment, for instance, yet their methods are in very large respects different from ours and we think they are not nearly as good and efficient as ours.

Q. And upon the principle of reciprocity, you consult with engineers and telephone men outside of the 16-story building in New York City, don't you? In other words, you don't all get up there in that building and study these problems and go down into your laboratories and work and shut your eyes to the great outside world,

A. No, we are constantly getting the idea of the engineers of the

Associated Companies.

Q. And if you see a good idea, and a good engineer in an independent telephone, if he has got any ideas you interchange with him, don't you?

A. Well, personally I don't do that.

Q. Well, when I am talking about you, I am talking about the concern you represent.

A. Well, in a general way I don't know of cases where that has

happened.

Q. You mean to say that you don't seek out the knowledge of

other men, find out what they are doing?

- A. Well, I am not stating that, but I am stating that as far as my experience has gone, and on traffic matters, I don't know of any occasion where we have gone to other telephone and outside assistance.
- Q. Well, I understand that. Tell me one thing, Mr. Estabrook, that the American Telephone and Telegraph Company has furnished to the telephone world in the last ten years that is at all startling in its nature and wouldn't be, or some similar matter, suggested to the ordinary scientific mind that has made any

special study of the subject?

A. Well, I think that there are-

Q. (Interrupting.) Well, name me one.

A. Outside of my own line in traffic work, the Transcontinental telephone.

Q. Transcontinental? What do you mean by that?

A. Is one startling thing. Q. What is that?

A. I think the transcontinental telephone was a new and startling-

Q. (Interrupting.) What do you mean by that?

A. I mean, the ability to talk from New York to San Francisco. Q. But I am talking about this local exchange. We are not talking to San Francisco.

Mr. D. A. Frank: Your question was general and you asked him for one single thing.

Q. I am asking you for one single thing that the American Telephone & Telegraph Company has produced for this exchange that is at all startling in its nature and that would even cause any great surprise to the mind of a man well informed in the subject.

Mr. D. A. Frank: Before the conversation is over, -- one pair of wires.

A. Well, you are referring, I assume, to traffic. You are limiting this to the kind of thing about which I have testified?

Q. Well, throw it wide open. Take anything that is beneficial to the local exchange that we would call an extraordinary discovery or invention.

A. Well, there are various things that made this transcontinental

long distance telephone possible, I think, come in that class.
Q. You are talking about—I take it you are talking about improvements or extended calls. Of course, long distance calls are not recent things.

A. There are certain inventions that have made that possible. You mean, that have made it possible to talk at long distance?

A. Yes, have made it possible. The talking at shorter distances

through more cable, for instance, has greatly increased-Q. (Interrupting.) What is the one thing that has been used here in this local exchange?

Mr. D. A. Frank: He has just told you and you interrupted him. You interrupted the stenographer while he was taking down what the witness said. You interrupted the witness before he got it out of his mouth and it isn't courteous to him.

Mr. Howard: I don't mean to be discourteous to Mr. Estabrook. I just want to find out what he knows about this subject.

Mr. D. A. Frank: Well, he knows it. 602

Mr. Howard: I don't doubt he knows it. I just want him to tell us.

Mr. D. A. Frank: Well, he will tell you.

Q. He says he will tell us. Please tell us.

A. Well, sticking right to the switch-board, the local, which I

understand you want-

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Q. Well, let's take specific matters. You took up this matter of jacks a while ago. By reducing the number of pegs or holes, whatever you call them, you found it possible to attach more wires to the same size board, that is, in simple language, that is about what you did, isn't it?

A. Yes, that is about what I did.

Q. Al- right. What is there about that that would appear to be original, or that isn't-wouldn't suggest itself to anybody, that if you reduce the number of—the size of a number of holes in a board that you will get in more wires? It wouldn't take an engineer to get that idea-

A. (Interrupting.) Perhaps it would have suggested itself to anybody in time, but it suggested itself to us and was developed by the general staff.

Q. Have you got it protected in any way?

Mr. D. A. Frank: Let him finish his sentence.

Mr. Howard: He has finished it.

603 A. Why, I think you will find the plugs and the jacks used

in the switch-board all bear patent marks.

Q. Now, let me understand you. No company outside of the American Telephone & Telegraph Company can install one of these boards that provides for the reduced number, the size holes and the consequent increased number in the attachments to the board? They have the exclusive privilege of the installation of those kind of boards. is that true?

A. No, the boards used by the Associated Companies, and built by the Western Electric Company according to their specifications are not similar to the boards built for other independent companies.

for instances, if that is what you are driving at.

Q. No, what I am asking is-

A. (Interrupting.) They have much of the same equipment on them.

Q. What I am driving at is: If any Independent Company, if we are an independent company in here and not receiving all these benefits, whether we could go to any factory and buy these boards without paying tribute to the American Telephone & Telegraph Company on account of their invention?

A. You can buy switchboards from independent manufacturers. of course, and probably boards of the same capacity. I don't know

what the price would be.

Q. You don't know anything about the price?

A. Or how the boards would compare in other respects. mentioned only one feature.

Q. In other words, your invention on your new idea along 604 that line wasn't such as you could have protected and isn't such that you have protected?

A. In that case, I imagine the simple jack was protected.

Q. You don't know?
A. I don't know.
Q. But you do know you could go to independent companies and buy boards that involve this same principle of reduced size holes and consequent increase in the attachments, you could go to independent companies and buy them?

A. Yes, you can buy jacks of approximately the same meas-

urements, but they are not the same jack.

Q. But if you can go to the independent companies and buy boards that involve that same principle, where have you furnished this particular exchange any service by making the discovery? A. The mere fact that we provided them in the first place.

Q. What we are getting at,—what we are paying you for is something that you are giving us that is of special service. Now, if you can go to an independent concern and buy these boards-

A. (Interrupting.) You can't go to an independent concern

and buy these boards.

Q. Well, I mean, boards involving the same principle, the principle of having permitted the cord, as I understand it, by bringing together the connections, to reach more, isn't that the principle as applies to the traffic expense?

A. Well, I don't think I recognize it in the way you point it out.

Q. Well, you state it then in your knowledge just in what

way it helps the traffic expense and makes-

A. (Interrupting.) It helps the traffic expense in that the larger the board is within certain limits, the less necessity there is for trunking, to other offices, and the less trunking there is the less labor there is involved and the better the service.

Q. That is the idea. Concentrating the wires into one board you avoid this expense and that is the principle involved that you have

been able to concentrate your wires, isn't it?

A. Yes, that is one of them.

Q. That is the principle. Now, you can go to independent companies, manufacturing companies, an independent company can go and buy that board as well as this company can, involving the same principle of concentrated connections?

A. That is true. But the same thing is true if you are buying an automobile, you can go to any manufacturer and buy an auto-

mobile that has the same principle.

Q. Well, then, the thing finally comes down to the proposition that although you have no protection upon the principle and don't give this Company, this local exchange here, any protection upon that principle, that the benefit it gets is because your particular article involving the same principle is superior to the other article involving the same principle?

A. Well, I don't think that the benefits of the 4½ per cent arrangement, that is what we are referring to, under which the American Company does development work for the Associated Companies, is confined to that one aspect by a great deal. There are things under development all the time. It is a

continuous service.

Q. I understand, but you have cited this as one of the benefits and I was trying to see whether you can sustain yourself with it or not, and as I understand now, we have gotten to the proposition that an independent company can get this same principle, as well as this Company which is paying for the privilege?

A. That is one of the things.

Q. And it is; you have stated this as one of the things that made your work so beneficial to this exchange, not all the things, but one of the things.

A. Yes, I stated that as one of the things.

Q. And the independent company can avail itself of it as well as the associated companies; we are together on that, too, aren't we?

Mr. D. A. Frank: No, he hasn't said that.

A. Independent Companies can go out and buy boards—

Q. (Interrupting.) Involving the same principles of concentrated connections?

A. Yes, has the same sized multiplies.

Mr. D. A. Frank: He hasn't told you what they pay for them, though.

Mr. Howard: Well, if you want to testify,-I was talking

607 about his own proposition.

Mr. D. A. Frank: You are assuming all the way through your examination that the evidence in this case shows that there were no patents protected. There were over 3,000 patents protected.

Mr. Howard: We heard about 3,000 patents, but we don't seem

to find them.

Mr. D. A. Frank: You had better read the testimony in the case.

Q. Now, you have said these improvements have been made largely in co-operation with the manufacturer. Now, when you spoke of the manufacturer, you meant the Western Electric Company, I expect?

A. I do on those particular things.

Q. Now, does the Western Electric Company pay you any premium or any salary or any compensation for your engineering work in assisting them in evolving their propositions and manufacturing their articles?

A. I don't know what the arrangements are between the Amer-

ican Company and the Western Company.

Q. You don't know whether the American Telephone & Telegraph Company gets compensation from the Electric Company, or not?

A. I don't know. I don't know what those arrangements are.

Q. But at any rate, they get the benefit of it, do they not? The
Western Company gets the benefit of it?

A. Well, the American Company gets-it is a mutual bene-

fit.

608 Q. I see, but the Western Electric Company, in the manufacture of its articles avails itself of the services of the American Telephone & Telegraph Company and its engineers?

A. Well, I should think you would have to ask them about that Q. Well, I believe you stated, I was just stating in a different way what you have already testified to. You have told us that the engineers in these improvements co-operate with the manufacturers. Well now, we have limited that to the Western Electric Company.

A. Well, perhaps this will make it clear, that the American engineers determine the design of the equipment to be made. The

Western Electric Company makes it.

Q. It comes in. When the equipment is made, who does it belong to,—the American of the Western Electric?

A. When it is made?

Q. Yes.

A. Well, I don't know.

Q. Well, aren't you somewhat familiar with the workings of this company that you represent, Mr. Estabrook? I want to know. We want to get down to know what we are paying for, that is all.

A. I will have to ask you to repeat your question.

Q. (Question immediately preceding read to witness.)

A. Well, I think I am somewhat familiar along certain lines.

ves.

Q. But they do this engineering work, and get up a design and submit it to the Western Electric Company, am I right so 609 far?

A. Yes.

Q. Then the Western Electric Company manufactures the equipment?

A. Yes.

Q. Included in that manufacture is the work and labor and the engineering service, or being furnished the design?

A. No.

Q. It is not?

A. I don't think so.

Q. Well, just kindly explain that to us now. I have understood you to say that the American Telephone & Telegraph Company furnishes the design.

A. It does.

Q. Isn't it worth anything to the manufacturer?

A. I assume that is the case.

Q. But the designing of the equipment, that is the engineering work. If the American Telephone & Telegraph Company didn't do it, they would have to do it themselves, they can't build it until they get their idea down in some sort of concrett form, can they, Mr. Estabrook?

A. This is stuff they are building for associated companies, I

assume?

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Q. I don't know what they are building. You have told us about improvements that finally find their way into this local company here,-not company, but exchange. Now, you have told us that these engineers in co-operation with the manufacturing

company bring about these improvements in equipment,-

that is true, isn't it, Mr. Estabrook?

- A. There has to be collaboration of costs before equipment is purchased. One set of men design it and the other set manufac-
- Q. I don't know whether it has to be or not. Whether it is enforced or a voluntary co-operation, we will assume that there is that co-operation-

A. (Interrupting.) Well, they both participate in the work be-

fore it is completed.

Q. Well, now, let me ask you as an engineer, whether the designing is any part of the manufacturing or necessary to it, whether a manufacturer has to have a design before he can construct?

A. He has to have a design, of course, before it can be constructed.

Q. Must be a design?

A. Yes.

Q. Them it is worth something then to have the design, or plans submitted to the manufacturer, isn't it?

A. Yes, it is worth something to the associated Companies.

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Q. Well, it is worth something to the manufacturer?

A. Because the equipment costs less.

Q. We are not coming to the associated companies yet, other than the Western Electric Company. We are confining ourselves to this The American Telephone & Telegraph Company fur-Company. nishes a design and plan and upon that plan the Western Electric Company constructs-

A. (Interposing.) The equipment for the associated com-

panies.

Q. Constructs the equipment. Then the associated companies buy the equipment, don't they?

A. Yes.

Q. And pay for it?

A. Yes.

Q. And put it into the local exchange.

A. Al- right.

Q. And the local exchange, we are assuming is what we are trying to show pays—the public where the local exchange is operating. pays such rate as will pay a return upon the value of this particular equipment?

A. Yes. Q. Now, then, when it comes into the exchange, it comes in here including the engineers' expenses, does it not?

A. No, I think it comes without that.

Q. Why not?
A. Because that development expense is paid by the American Company.

Q. Is paid by the American Company?
A. The stuff costs—

- Q. (Interrupting.) Then the American Company, according to your idea-have you familiarized yourself with this enough to know?
 - Mr. D. A. Frank: He has told you he has.

Q. Al- right, then, after this article is manufactured and 612 it becomes subject to sale now to the consumer?

A. You mean the associated companies?

Q. Has the American Telephone & Telegraph Company an interest in that manufactured article, in the manufactured equipment?

A. The American Company is the majority stockholder of the Western Electric and it is the majority stockholder of the Associated Company in both cases.

Q. Yes, I think we are agreed upon that, Mr. Estabrook, that they

are the same thing.

Mr. D. A. Frank: No, he didn't say that.

Mr. Howard: I am assuming it is bound to have an interest.

Mr. D. A. Frank: He didn't say that either.

Q. Well, Mr. Estabrook, treating them now as different companies-

A. (Interrupting.) Treat what as different companies?

Q. The American Telephone & Telegraph Company and the West-After the Western Electric manufactures an article now, has the American Telephone & Telegraph Company any interest in that manufactured article?

A. Only such as he gets, I should say, through its interests in the associated company, assuming that that is the purchaser and the

Western Electric Company.

Q. Only such, Well then, whatever services the American Telegraph & Telephone Company may have rendered have merged into the manufactured product, haven't they, in that respect? Those engineering services have merged into and become a part of the manufactured product and the people of this community but the product and put it in at the manufacturer's cost,

The situation seems to be this: That the A. (Interrupting.)

Western Company, for instance-

Now, do you? Unless you do know-Q. (Interrupting.)

Mr. D. A. Frank (interrupting): Let him answer the question.

Q. Do you know what the arrangement is between the American Telephone and Telegraph Company and the Western Electric as to whether the American Telephone & Telegraph Company gets any compensation for engineering services?

A. I understand they don't. At least, I don't understand they do.

Q. You don't know?

A. I don't believe that any part of-

Q. (Interrupting.) Do you know, Mr. Estabrook? Do you know what the arrangement is between them in regard to this manufacturing of equipment?

Mr. J. D. Frank: Just answer the question yes or no.

A. No, I don't believe I know. 614

Mr. Howard: Then there is no use to pursue that any further, because you don't know.

Q. Mr. Estabrook, all these matters you have been testifying about this morning apply to the equipment of one kind and another

that's used in the local telephone exchanges, do they?

A. Some of it applies to equipment, some of it applies to the methods of using the equipment, and some of it applies to the methods of running the offices-handling the forces. It is more than just a matter of equipment; in fact, a good part of the traffic problems are more than matters of equipment—they are matters of the operation of the equipment and the handling of the traffic forces.

Q. Mr. Estabrook, can independent companies buy this equipment

from the Western Electric Company?

A. It is my understanding that they can buy part of the equipment, or most of the equipment, but they do not buy the equipment set up to our specifications and arrangement; they don't buy the complete switchboard units as specified and sold to the Bell Company. A switchboard built by the Bell Company is built according to certain definite specifications covering not only the equipment and material, but the way they are assembled, and everything else.

Q. The Bell Company has their own ideas?

A. They have their own standards that they want to have followed.

Q. There are concerns that are more extensively engaged in the manufacture of independent equipment, are they not?

A. Yes, there are manfacturers of independent switchboards and

other telephone apparatus.

Q. Have you ever talked to them—to any of those gentlemen?
A. Yes, I have talked to them but not on business; I have met

then and talked with them, yes.

Q. Have you ever gone into their factories to see what they were doing?

A. No.

Q. You might get some pretty good ideas there, might you, Mr. Estabrook?

A. I really don't feel that we are ever apt to learn much.

Q. How did you arrive at that conclusion? You want to keep

abreast of the times, do you not?

A. Well, from the little experience I have had, I don't think that their equipment is as good as the stuff we have,—I haven't very much experience.

Q. And you have reached that stage where you say you are self-

satisfied?

A. No, we are at all times maintaining this department, and are

constantly seeking for better stuff.

Q. Yet, you don't go to other companies to find out what they are doing, whether they have got a pretty likely establishment and if they have some pretty good ideas and are working them 616 up?

A. Well, that would not be-

Q. (Interrupting.) When I say you I mean the members of your staff.

A. On that particular point I do not know.

Q. What are you,—just one of the staff? Or, did I understand you to say that you were a supervisor, or head, of some department?

A. No, the traffic branch of the Engineering Department is under Mr. Watterson, and I am one of the three superintendents who report directly to him.

Q. These independent manufacturers think pretty well of their

own equipment, don't they?

A. I have no doubt they do.

Q. I expect if they came here and were asked about it they would say as you do about yours,—that they have every reason to think that they would tell how much they have done for the telephone industry.

Mr. D. A. Frank: Why don't you bring them here?

Mr. Howard: We are poor, Mr. Frank, and want to grab what we can get.

A. Why, I think if you take away from the modern switchboard the things developed by the Bell engineers you would have very little left.

(By Mr. Howard:)

Q. That's your idea about it, but I am asking you if you ever talked to any of these men, and whether they feel pretty 617 well satisfied with the work they are doing?

A. I haven't talked with them along that line and can't tell

whether they are satisfied or not.

Q. You haven't investigated along that line?
A. No.

Q. Do you have any record of the name of the last engineer you sent down to this town, Mr. Estabrook?

A. Well,-the last one you want? Mr. Walker was the last one,-

he reports to me.

Q. When did Mr. Walker come down here? A. He was down here in July, 1917.

Q. In July, 1917?

A. Yes, sir. Q. He didn't do any engineering for us here the last year— in 1919?

A. Here at Houston?

Q. Here at Houston, in the year 1919. A. Here at Houston,-no, he did not.

Q. Now, for the years 1918 and 1918 just what have you done to earn the 41/2 per cent other than to send some of these circulars

down here?

A. Well, we have had, of course, work under way all the timethis organization of traffic engineers is working constantly on matters that are hoped to be used by the Associated Companies, including the Southwestern Company.

Q. Have you ever-

A. (Interrupting.) Every portion of the work is under study and investigation all the time. That's what the force is maintained for.

Q. You say you have operated some telephone plants?
A. Have I been in the field myself? Yes, I was eight years with two Associated Companies.

Q. What were your duties there?

A. I was in traffic work during all that period.

Q. What were your duties? "Traffic work" is a very latitudinous

A. Well, I started out in 1902 doing that class of work four years and was connected with the Central District Company of Pittsburgh and had the field traffic work.

Q. What were some of your duties?

A. Well, I visited various exchanges and looked into the conditions I found there and made suggestions. I had charge of a district for two years.

Q. Did you ever get right down and do the work?

A. Yes, studied the switchboard and operated a board.

Q. How long did you do that work?

A. I never did that continuously for a period, but did it enough to familiarize myself with it.

Q. Did it on a tour of inspection,-just headed in and out?

A. Yes, I never was an operator.

Q. You never got down and rustled with the proposition of trying to make a telephone company pay, or anything of that kind?

A. On the financial side of it?

Q. Yes.

- A. No. I never had any connection with the financial operation of a company, as far as that is concerned, but as 619 traffic superintendent was responsible for traffic expense.
- Q. Now, take your machine and you perform such peculiar duties, and others in the organization perform their duties, and that's the contact you have had with the telephone business?

A. No, I think it's a little broader than that.

Q. That's pretty broad, I think, but to see if we can get down somewhere near where the work was going on, instead of taking a birds'-eve view of it.

A. No, for eight years I was right in an operating company, and had the raily routine that goes with the handling of the traffic

department.

Q. What did you do there? Now, just give us a day's work, or

kinds of work,—the details of it.

A. Well, take the period when I was District Traffic Chief at New Castle, Pennsylvania: There I was responsible for the service in that city and perhaps twenty-five smaller exchanges in that district. I had reporting to me the chief operators of those exchanges, and they of course, were responsible for the operating forces and the giving of the service.

Q. Received the reports is what you mean, and kind-a tabulated those things, and kept a general outlook upon the proposition?

- A. No, they were questions of skill, and principally involved the services of the number of operators required; matters of payroll changes, questions of moving people from one town to 620 another; questions of transferring the individuals to the places where needed in the local exchange; the question of the expenses for running that Department, and matters of service investigations and complaints, see that the proper standard of operating practices were followed,—the regular routine work that any District Traffic Chief has.
- Mr. J. D. Frank: The most practical traffic experience a man can have?

A. Why, there is nothing closer than the daily routine. for four years after that I was Traffic Superintendent for a company that covered three states,-Southwestern Minnesota, North Dakota and South Dakota. The Company had exchanges in all the different cities, and the same problems were repreated on a larger scale.

Q. You never had any money invested in a telephone company that you were afraid you might lose?

A. Nothing more than ten or twenty shares of stock at one time or

another.

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Q. You were never pressed to the necessity of getting down to figure if you could get along with seven or eight girls when you had fifteen?

A. Yes, that comes up with every traffic man.

Q. That comes up to you in a swivel chair, by looking over tabulations and seeing, on paper, how it compares with last year and how this point compared to that point, and drawing a lot of mathematical calculations from these different reports,—that's the

way you handle them, largely?

Mr. D. A. Frank: A sort of "rubber-stamp" man—is that your idea?

Mr. Howard: Yes.

A. Why, that's not a fair picture of a running a traffic Department. You need all of those things enumerated necessarily to go over all the reports carefully so as to analyze the situation, but then something has to be done about it, after you see what the conclusions are, and that rubber stamp doesn't do.

Q. You can't do all that with a rubber stamp. Where do you keep these things here in New York, Mr. Estabrook—have you got

a storehouse there?

A. What are they, please?

Q. Local book accounts; how many of these have you got on hand in New York?

A. I could not tell you.

Q. Four or five or six or seven, eight, or ten thousand?

A. Oh, we have very accurate information as to the amount of those called for by the Associated Companies, and the stock is kept replenished.

Q. You have got a warehouse to keep these stock circulars in?
 A. Yes, a stock is kept on hand and is replenished as it becomes extinct.

Mr. D. A. Frank: He asked you if you had a warehouse.
A. I replied that we had a stock of these. Now, these circulars are handled under two different bases; a certain part of them are carried in stock by the Western Electric Company and are requisitioned from their stock.

(By Mr. Howard:)

Q. The Western Electric Company has a warehouse, and the

American Tel. & Tel. Company have a warehouse?

A. They have a stock of these circulars. I have never seen the place where they keep them. Now, other supplies of these circulars are kept in our own department, in a stock room, I suppose, somewhere in the building. I haven't even seen the stock room in our own Department.

Q. A man may have been in New York and not have seen this building of yours?

A. Well, I have seen the Western Electric Building.

Q. Well, getting right down to this, this is stock stuff, isn't it? You get them out by the hundred thousand and have some shipping clerks or other men that mail them out periodically?

A. They are requisitioned by the Associated Companies and sent

out as they call for them.

Mr. D. A. Frank: What difference does it make as to how many they have?

Mr. Howard: Simply this: You bring these things here and set them up as figured out carefully, while they are nothing but a mere accumulation of years that go by, such as any man naturally accumulates in his business.

Mr. D. A. Frank: They just happen, do they?

Mr. Howard: Just happen, as any other concern's records growup.

Mr. D. A. Frank: You haven't read any of them, have you?

Mr. Howard: No, and I never will.

(By Mr. Howard:)

Q. But they are stock propositions?

A. They are printed and carried in stock.

Q. What particular ones of these things that you brought here

have you worked on, Mr. Estabrook?

A. Well, I have worked on those that you have right there, that you were just referring to, in fact, I have worked, I guess, on most of them—I am trying to think of any exception. They are constantly being revised and new editions being sent out.

Q. When was the basis of these things formed—have you any

idea about that—when the first edition was published?

A. Well, on the Traffic Circulars, those you just referred to—the circulars on that subject—dealing with the book accounts—the earliest circular on that subject was sent out in about 1903.

Now, there have been twelve or fourteen of that order of circulars sent out on that subject at various times, and the reason why new ones are sent is that changes are constantly being made in the—different changes are being made in the methods. We are constantly making studies, and I suppose have sent engineers to different cities, maybe forty or fifty cities—sometimes a man stays there a few days, a few weeks, and sometimes a great many months investigating some subject, getting some new data or information, and that is put in one of these circulars. That circular on the book accounts and has a score of studies back of it.

Q. As I get this proposition, all these local concerns are largely managed by the American Telephone & Telegraph Company, and the local management goes by circulars and goes by orders from the American Telephone and Telegraph Company on the management of the business—in other words, they are manages from dustances

instead of locally, under the ingenuity of the local men?

A. I don't think that's true at all.

Q. Well, this seems to be their pupil, and they get these circulars?

A. These circulars are sent out to them as containing the best information and advice that we have to give. Now, they follow that, or not, as they choose; there is no compulsion, and if they disagree on some detail, or disagree on a general principle, 625

they are very apt to follow their own advice or bring the matter up and we will investigate the matter again.

Q. The thing amounts to nothing except a kind of a periodical, just like a telephone journal would amount to-some bright young fellow gets out of college, has an idea, and it is sent to the local concern, they read it if they want to adopt it and if they don't want to they do not; that's what these circulars amount to?

A. No.

Q. Tell us what they do do;—they are not authority—they don't mean anything except a conglomeration of suggestions of a good

many engineers working upon a proposition?

A. They are the result of the study of some person who has specialized on a subject, or a number of them, and who has the time and the facilities and the information to make a very careful studythe results are sent out to the Associated Companies and the Associated Company considers it and in nine times out of ten, or more than that, finds that it looks reasonable, looks like good advice, and adopts it.

Q. Just what have the people in this community gotten in 1919 and 1918 for something like \$50,000.00—is that it—about \$40,-000.00, I think it is—forty-odd thousand dollars, when you get down to all of these experts and engineers—the work you are doing up in New York, and tried to apply it to absorb this fort-odd thousand

dollars a year, the sum total is that some pamphlets are shipped out giving what somebody thinks are very good sug-626 gestions upon how to manage a telephone plant? Is there

anything else they for that?

A. Yes, a great many things. You-

Q. (Interrupting.) What did we get in 1919? Just let's get down to recent years and let's see what we got in the year just closing.

Mr. D. A. Frank: Do you want him to testify as to other Departments?

Mr. Howard: I want him to tell us what we got for this \$40,-000.00. So far we have gotten these pamphlets.

Mr. D. A. Frank: The record is full of it, - you don't read it.

(By Mr. Howard:)

Q. I want you to get down and tell us what we are paying for. As I see it, you say you sent out these pemphlets for these local men to peruse or adopt, as they see fit,-that you have furnished certain engineering advice to the manufacturers before this equipment that the people here buy is built, and that in 1917 you sent a man down here. Now, aside from your induction coils and receivers and transmitters, what did we get?

Mr. J. D. Frank: Go ahead and tell him, Mr. Estabrook.

627 (By Mr. Howard:)

Q. Just tell us, aside from those things.

A. If I may, in starting out mention the fact,—of course all the telephone instruments used are provided by the American Company. Now, I will refer also to the fact that they are local service, connecting service—

Q. (Interrupting.) What local service was furnished these peo-

ple down here in 1919?

A. I want to mention the fact that there are these classes of service.

Q. What are we paying for in 1919,—the forty-odd thousand dol-

lars in the way of local service in 1919?

A. I cannot be specific on that thing. I want to refer to these classes.

Q. You have told us, in a pretty general way, how beneficial it has been to this company, and you are probably sincere in it, but not I want you to analyze it, and want to know what we are paying for.

Mr. D. A. Frank: Let him finish the answer and then cross examine him on it.

(By Mr. Howard:)

Q. Al- right.

A. Now, to answer that correctly I would have to go over the files, confining myself purely to the traffic enginerring service, assuming that I don't know anything about this other service, I would have to go over the files of the engineering department and find out, for instance, what matters had been referred to us from the

Southwestern system that apply to this city in which we have 628 given consulting advice, and I would have to have information as to the visits and trips and conferences between the American Engineers and the engineers of the Southwestern system because many of the things will be covered in these conferences and by that correspondence. I know that in New York we are working all the time upon the various questions that I touched on before in the handling of the forces and the development of the property, the improvement of the operating methods. We are doing lots of work that will be come serviceable, some of it in the future and some right at the present time by the use of circulars that are out now and besides those which you have seen there are some in New York and others in the hands of people at St. Louis. Work is being done constantly by us for the Southwestern Company.

Q. Thomas Edison is working some himself up there in that part of the country doing some experimental work. Experimental

work is going on all over this country of ours in all industries, is there not, Mr. Estabrook?

A. I suppose so.

Q. As far as I can see yet we have formed just as much connection with Thomas Edison as we have with the American Tel. & Tel. Company. I don't doubt your research. You are an energetic lot of gentlemen in your studies, and know your business, but what I am interested in is to know where you have applied any of that efficiency and energy to this local exchange; that's what we are paying for.

A. Because on account of the way in which the South-629 western system is organized it is largely taken care of in

Dallas or St. Louis.

Q. What conferences—you referred to that, and we are getting down a little bit close. You referred to conferences between the engineers locally here and your staff of engineers. Now tell us what conferences you had in 1919,—who they were.

A. Well, the last-in fact the only one I remember, is one we

had in the last month in St. Louis.

Q. Was that about this rate hearing?

A. No, not at all. My superior officer, Mr Watterson, and I were asked to come out by Mr. Pennell to attend a traffic conference in St. Louis. At that traffic conference we had the traffic superintendent and traffic engineers from Texas up at St. Louis at a two or three day conference and all kinds of traffic problems were taken up.

Q. Did we have any representative there?

A. From Houston?

Q. Yes,-that's what we are interested in.

A. I do not know that any man from the Houston district was up

there, but the superior officers of that man were there.

Q. Lets see,—we have gotten that much; you had a conference of some superiors at a distance, not directly attended by anyone from Houston, in which you thought you would get together and better traffic conditions. Now, what betterment resulted from that conference?

A. Well, that's only a month ago and the result of that work won't be evidence- for some time.

Q. What did you install,—what did you suggest?

Mr. D. A. Frank: Mr. Howard, if you are actually looking for that engineering data I will state for your information that the chief engineer of the Southwestern system is on the Sunshine Special and will be on the stand tomorrow and you can cross examine him to your heart's content for that identical thing and everything else you want.

Mr. Howard: I am going to take your word for it and see what

he knows about it.

Mr. D. A. Frank: This witness doesn't know about local service in the city of Houston. He is a traffic engineer and is here to tell you what he knows about traffic service. Mr. Howard: That's all, Mr. Estabrook. We will take the other witness, then, the man who knows.

A. I could get some more specific information by searching through our files and find out what correspondence we have had.

Redirect examination.

Questions by Mr. J. D. Frank:

Q. Mr. Estabrook, does the American Telegraph & Telephone Company send this information to any other companies other

631 than Associated Companies?

A. Not that I ever heard of. Our circulars are sent only to our own Associated Companies. Of course we may get occasional letters from anybody but we don't do any work that I know of except for the long line companies,—the long line department of the American Telephone & Telegraph Company.

Q. Well, do you know of any place where Associate or other companies could get the service rendered by the American Telephone &

Telegraph Company?

A. I don't think it is possible to get it anywhere else because the

same organization doesn't exist anywhere else.

Q. Counsel has questioned you with reference to inventions and patents and improvements and so forth in the plant. You are not a plant engineer, are you?

A. No; I am not.

Q. You didn't intend to mention and testify about those facts,—the facts about inventions and the distributing system?

A. No; I am interested in those things only as a man using them, not as a plant man constructing and maintaining them, or a man interested in the patent side at all.

Q. Counsel asked you the question — or not you had any money at stake when you were acting as general traffic superintendent and district traffic chief, and so forth. The people you were working for had money invested in those plants, did they not?

A. Of course; they were the officials of the company.

Q. Well, did the officials of the company demand that the property be economically operated as well as efficiently?

A. Absolutely; that was the object.

Q. And if you hadn't operated the plant economically would you have held your job for eight years, and would you have been engaged in that line of work?

A. Probably not.

Q. Is your department the only department that renders services under this license contract?

A. No; there are many other departments of the American Com-

pany that render services.

Q. Counsel made light of these so-called pamphlets sent out, and spoke of them as a "stock supply," and so forth. Do you just go on and print something on a typewriter for a day or two and then send them out?

A. No; the information is required to prepare the pamphlets and tables, and all the engineering information in the pamphlets is obtained by sending men around to the different cities to study the conditions, the equipment or method, whatever it is, right in the field and they remain there for many weeks. or months in some cases, making these studies.

Q. And the information set out in these circulars is the result of months and years of experiment and research work of the various departments of the American Telephone and Telegraph Company?

A. That is right.

Q. With reference to that conference held in St. Louis counsel asked you if the city of Houston was represented. The fact of the matter is, is it not, that the general traffic superintendent of the State of Texas and other traffic officials of the Southwestern Telegraph and

Telephone Company were present at that conference?

633 A. That is right.

Mr. Howard: We don't deny that long distance operatives were present.

Q. So that general traffic superintendents, and traffic engineers, have supervision over this Houston exchange?

A. They do.

Q. And are rendering service to this local exchange all the time in their official positions?

A. They must be.

Mr. J. D. Frank: That's all.

Recross-examination.

Questions by Mr. Howard:

Q. Mr. Estabrook, referring again to the pamphlets, they are not copyrighted?

A. Yes; I think you will find on that pamphlet-most of them

are,—almost invariably.

Mr. Howard: That's all, Mr. Estabrook.

W. O. Pennell, a witness for the plaintiff, after being duly sworn, testified as follows, to-wit:

Direct examination.

(Questions by Mr. Duls:)

My name is W. O. Pennell, and I live in Webster Groves, a

suburb of St. Louis.

My profession is that of an engineer, Chief Engineer of the Southwestern Bel- Telephone System; that's the System which operates the Bell telephone properties in the States of Texas, Oklahoma, Missouri, Kansas, Arkansas and a portion of Illinois contiguous to St. Louis. I am Chief Engineer, and my profession is that of a tele-

phone engineer. This Southwestern Company which operates here in Houston is a constituent part of the Southwestern Bell System.

I graduated from the Massachusetts Institute of Technology in the year 1896,—got a degree in the course of electrical engineering. For a year and a half after that I taught engineering and mathematics in La Fayette College in Pennsylvania. I then went with the Bell Telephone Company of Pennsylvania, and was with them about five years as an Assistant Engineer; I had charge of the building equipment, and had considerable to do with the outside plant work. I then was transferred to the American Telephone & Telegraph

Company, and was with that Company for about a year. I was traveling most of the time. My headquarters were in Boston, I was in Detroit, Milwaukee and Minneapolis and my work was generally with the outside plant. In 1903 I became the Chief Engineer of the Missouri & Kansas Telephone Company, and that is the Company that operated at that time in Oklahoma, Kansas and western Missouri. I held that position until 1912, when the Southwestern Bell System was formed and I became the building and Equipment Engineer of the Southwestern Bell Telephone System, and in a few years, the Chief Engineer, which position I have held until this time. I suppose that during this experience I have had charge, from an engineering point of view, active charge, of about \$75,000,000.00 worth of telephone plant. I am now the Chief Engineer for the Southwestern System.

I am familiar with the payment made by the Southwestern Telephone & Telegraph Company to the American Telephone & Telegraph Company for instruments, rentals and the services of the

American Company.

The total amount of the payment from the Houston exchange to the American Company, for the year ending October 31st, 1919, was \$42,791.92,—that was for the year ending October 31st, 1919. This payment is figured as 4½ per cent of certain gross revenues; the revenues which are included in figuring these payments are those known as Interstate Commerce Commission Accounts,—as Account 500; Subscribers' Station Revenue; Account 501,—

636 Public Pay Station Revenue; Account 504, Private Exchange Lines; Account 510,—Message Tolls; and from this total is deducted Account 304,—Uncollectable Operating Revenues. The payment is figured as 4½% of the sum of all those revenues. To a large extent that represents the revenue which the Southwestern Company receives here in Houston from its exchange service and also its toll revenue. There are quite a number of accounts which are not included, but I imagine that these accounts I have enumerated are, perhaps, 95% of the exchange revenue from the Houston exchange.

Q. What per cent of this payment of the value of the plant here in Houston is represented by reproduction cost new, less the de-

preciation?

A. This payment, that we call the $4\frac{1}{2}\%$ payment, figures right about 66/100ths of 1%,—a little over $\frac{1}{2}$ of 1% of the value of the plant in Houston, as calculated by Mr. Hoag in his testimony.

The $4\frac{1}{2}\%$ payment is not a dividend of $4\frac{1}{2}\%$,—nothing of the kind. It is merely $4\frac{1}{2}\%$ of certain revenues; the relation is ordinarily known as the $4\frac{1}{2}\%$ relation, and possibly, in the minds of those who are not familiar with it, it may be thought to be a $4\frac{1}{2}\%$ dividend, or $4\frac{1}{2}\%$ return on the property. It is not that. It is $4\frac{1}{2}$ per cent of certain revenues,—of certain gross receipts,—and figures out, in the case of Houston, about $\frac{1}{2}$ of one per cent of the property.

Mr. Howard: That is, the property,—you mean on Mr. Hoag's set-up?

637 A. Yes, sir.

The payment has not always been figured as $4\frac{1}{2}\%$ of certain of the gross revenues that I have testified to. In early days it was an applied sum for stations; of course, whatever basis you take, the percentage would be longer or smaller,—the larger the value it would be smaller,—and the smaller the value it would be larger. It — not be less than $\frac{1}{2}$ of one per cent. It would be over $\frac{1}{2}$ of one per cent. To my mind, it gives one a little clear idea of the magnitude of the payment. That is all I had in mind in mentioning it that way.

Mr. Powell: About & of one per cent on the Hoag inventory? Mr.

Pennell, you were going to tell us what the payment was.

A. Yes, sir, I got off on a tangent. The payment used to be an applied sum per station, and it was this amount per station—this amount per station varied with the revenue from the particular station. At one time the payment was as high as \$14.00 a station. It was reduced from time to time, and the last reduction was made in 1902, when the method of figuring the payment was changed to the 4½% basis and it has remained at that basis ever since. My relation—my experience with this relation goes back over twenty years in the service, and the services which have been obtained under

it have, in my opinion, been progressively increasing in value

638 and this payment has been decreasing in amount.

Q. Mr. Pennell, you don't know just why that was changed

to 41/2 % do you?

A. Well, I imagine that one reason was, it was a good deal easier to keep track of it. When the payments were made on the basis of a certain amount per station,—"A" dollars for a station which had a certain revenue,—"B" dollars for another revenue; and it was rather complicated book-keeping to keep track of it, and it was a much simpler method of book-keeping for a percentage basis. I don't know that that was the reason, but I would imagine that that was one of the chief reasons. You understand that when this change was made to $4\frac{1}{2}\%$ it involved at that time a considerable reduction in the payment; it wasn't an increase, nor it wasn't the same payment, but was a reduction, but the basis of calculating the payment was changed too.

The payment is made under, or grew out of what is known as the License Contract. I have an exhibit covering this License Contract between the American Company and the Southwestern Company.

Mr. Duls: We offer that as Plaintiffe Exhibit No. 146.

(The Contract was thereupon received in evidence, marked "Plaintiff's Exhibit No. 146, Witness Pennell" and is filed herewith.)

639 (By Mr. Duls:)

Q. When was this contract first entered into, -what year?

A. Why I believe the earliest date in the contract is '85,-I think it is.

Q. My copy is '89,—July 1889.

Yes, sir, I see that's right; that is the first date.

Q. At that time did the American Company own a majority of the stock in the Southwestern Company?

A. I understand that at that time they owned,—I think it was something like 30% of the stock,-not a majority, a minority.

Q. Now, Mr. Pennell, you have testified that you received certain services for this payment. Please describe briefly what those services are.

A. Yes. It might be well just to point out when the contract was entered into — this Company,—the American Telephone & Telegraph Company, did not control this Company. The payments The payments since that time have been decreased progressively, and, in my opinion, the benefits from the contracts have been progressively increased,-that is, the contract entered into at arms length-

Q. (Interrupting.) At the time the contract was made, did the American Company own any stock at all in the Southwestern Com-

pany?

A. I don't know, my impression is that they owned 30%. I

think that is in evidence somewhere in the testimony.

Q. Al- right. Now, go ahead and tell us briefly what services you received, and by "you" I mean the Southwestern Telegraph & Tele-

phone Company. phone Company.

A. The so-called 4½% services can be briefly stated as fol-640 lows: First: The instrument service, which consists of furnishing the transmitters, the receivers, the induction coils and certain working elements of the telephone repeater. Second: The services of the research and development and engineering department, which includes the use of the result of all research and development work; the use and protection of patents, specific engineering services and general engineering services relating to plants, traffic and com-mercial matters. Third: The services of the legal department. I think the lawyers can tell you more about that than I can, but they include expert legal advice, the issuance of daily bulletins of commission decisions, or court cases, compilation of statutes which relate to the telephone industry, and the distribution of other statistics and information which will be of value to the lawyers. that's fourth; Fifth: The services of the Accounting Department, that includes accounting standardization, periodic auditing of the Southwestern's books, expert advice on accounting methods of all sorts, and statistical advice; and next, the services of the Executive and Financial Departments, including advice upon administrative and executive problems, the loaning of money at ordinary rates of interest, and the assistance in the sale of securities, and in a general way such financial assistance as the American Company as its credit and finances will allow it to give the Southwestern 641 Company.

Q. That described, in a general way, the services which the Southwestern Company receives under this payment to the American Com-

pany?

A. Yes, sir.
Q. Does the payment cover any particular service, or cover all of them?

A. It is in payment for all of those services.

Q. Now, let's take them up briefly in detail. Please describe

what you mean by "instrument service."

A. I mean by "instrument service" the furnishing of the transmitter, the receiver and the induction coil. You are all, I guess, familiar with what those instruments are. I think Mr. Rhodes showed them, but I had a transmitter and receiver cut in two so that you can see what they look like inside. Perhaps Mr. Howard has not seen that, and perhaps would like to see it. These are the two instruments which are visible, and associated with them and necessary to make them work properly is what we call the induction It's this coil here (indicating) and this other portion is the conductor.

Q. I don't think that's been shown.

A. The coil, Mr. Duls, the metal part is the condenser which is attached to it,—that's the induction coil, (indicating).

Q. These three instruments which you have just shown us here

may be designated as the voice of the telephone?

A. Yes, sir, they are the parts which really you talk into 642 and you hear from, and which are the voice, or part of the system, anything you want to call it. The induction coil is fully enclosed in the box and isn't vivible by an external inspection.

Q. Does the Southwestern Company have any money invested in

these transmitters, receivers and induction coils in Houston?

A. No, sir. These are furnished by the American Telephone and Telegraph Company and we have no money invested in them with

Q. (Interrupting.) Do you know who the owner of these three

parts of the telephone is?

A. The owner is the American Telephone & Telegraph Company. Q. If the American Company owns them, then does it reduce

the investment of the Southwestern Company by just that much?

A. Yes, certainly, I figured out—I figured that out roughly in Houston, and figuring the cost of these instruments at the market value, the cost of these instruments would be something like \$147,-000.00; in other words, answering your question, if we were to own these instruments at present day prices, our plant investment would be something like \$147,000.00 more than it is now.

Q. Mr. Pennell, the American Company furnishes these instruments. Now what other service does it furnish in connection with

them; who repairs them when they get out of order?

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A. If the instruments become defective, or get out of order, or are broken, if we return them to the warehouse of the American Company, which in this case is in Houston, they will either repair them at their expense, or replace them with a perfect set of instruments.

Q. If the American Company did not repair them, why the expense of repairing them would be on the Southwestern Company?

The Southwestern Company would have to have them?

A. Yes, certainly. If we needed the instruments we would have to repair them ourselves.

Q. Have there been any improvements in the types of receivers,

transmitters and induction coils that you know of?

A. The instruments are being improved all the time; new types are being brought out, which are more efficient and better than the

oil types.

Q. Mr. Rhodes went into that in considerable detail, and showed us how the types developed from the earliest to the standard type in effect today and we won't go into that further. Under the license arrangement does the American Company obligate itself to replace obsolete types of instruments?

A. Yes, if an instrument becomes obsolete, we have the privilege under this arrangement of returning it to the warehouse and they will replace it with the most modern types. Now, that is a very considerable advantage to us. It has these two advantages: First,

it gives us an instrument which will talk better. When I say "more efficient" I don't mean in the date, but a more efficient instrument. It not only gives us better transmission, but on those lines where the transmission is already satisfactory on account of the greater efficiency of the instrument, it enables us to use less copper in the line; in other words, it enables us without impairing the transmission in any way, to build the plant at a smaller cost, and so there are two advantages in the improvement of the transmitter and receiver, that is, the first is the improvement where we need it, and second it makes for considerable less cost of plant, because we use less copper—less conducting material in the lines.

Q. Isn't there also an advantage in the fact that as these parts become obsolete and have to be replaced, if they were owned by the Southwestern Company, the old types would have to be junked?

A. Yes, there is that advantage, if we owned our own instruments, if we wanted to get the new type, improved types, we would have to take the old types out and in most cases, we would get nothing for it except junk, and the junk would probably hardly pay us the cost of taking them out and we have to pay for the new type of instrument, as well as the obsolete. I would not say they would be as free to take out the old instruments as we are under this arrangement; they are in there and will talk as well as this instrument, and

I believe that is one of the reasons why the American Company has this policy of owning its instruments in order to maintain the heart of the system which furnishes the trans-

mission, at a high grade of efficiency. And---

Q. (Interrupting.) The Associated Companies, in other words, wouldn't be so ready to change the types that they had in use?

A. Undoubtedly not. Because the cost goes into their pocket

books.

Q. Under this Licensee arrangement, the American Company assumes the expense of carrying receivers, transmitters, and induc-

tion coils in stock?

A. They allow us to carry—at least, we can carry, three per cent surplus without any additional stock, that is, three per cent of instruments on the instruments in service. That is as large a stock as we would like to carry and in addition to that they carry in their central warehouses a stock of instruments which is something like around seven or ten per cent, I believe, of the instruments in service of the whole country. It is the idea of the central stock being if there is a large growth and large demand for instruments, or any particular manufacturing difficulties, or material difficulties in making instruments this surplus stock will enable them to have a supply of instruments and meet the demand.

Q. And in case of emergency that also is a considerable ad-

vantage?

A. Yes, of course, if we have an earth-quake, or fire like San Francisco, they always have a surplus available to meet the

646 needs.

Q. Have you prepared an exhibit showing the value of this instrument service in dollars and cents to the Southwestern Company, in the Houston Exchange?

A. Yes, I have.

Mr. Ferrell: That, Mr. Howard, is what you were calling for this morning.

Mr. Howard: I wasn't asking for anything, I was asking the wit-

ness a question.

Mr. Ferrell: We offer this as Plaintiff's exhibit No. 147.

(Thereupon, the statement was received in evidence, marked "Plaintiff's Exhibit No. 147 Witness Pennell" and filed herewith.)

(By Mr. Ferrell:)

Q. Taking this up, Mr. Fennell, tell us what this exhibit shows.

A. This shows that we had, at the time as of which it was made out, which was October 1, 1919, 28,305 transmitters in Houston, and 28,374 receivers, both of these being in use at the subscribers' stations, some in use at the switchboards, or used for testing purposes, and something like 800 of instrunents in stock. The average number of sets—we call a "set" a transmitter and receiver, with its induction coils; the sum of these two divided by two is 28,340.

The total subscribers' stations at that time in Houston were 26,693, or a ratio of sets to stations was 1.06, that is, there were more sets than there were stations, because we used the sets at the switchboards, and so on. The cost of an instrument set, that is the transition of the sets at the switchboards.

that is, the transmitter, receiver and induction coil I have estimated at \$4.45. I have annual charges on this set, including the reserve

for replacements return on investment, repairs, administration and contingencies, at 231/2%, in other words, if we were to own the sets they would cost us, the first set \$1.04, or per station in service, \$1.10. The total payment by us for the year ending October 31st, \$42. 791.92, or the payment per station in service was \$1.65 and I have shown that the cost to us, if we were to own the instrument ourselves, or the instrument service is \$1.10, leaving a balance of 55¢, or about .046¢ per station, per month as the cost to us of the other service other than the instrument service, or in dollars and cents out of the total payment for that year of \$42,791.92, \$25,541.00 would be the cost to us of the instrument service, and the balance of \$14,251.00 is what we paid for the other service.

Q. Considerable over half of what you pay then for the instru-

ment service?

A. Yes. Q. The total payment being in round figures, \$42,000.00 of which the instrument service would cost \$28,000.00?

A. Yes, that's the idea.

648 Mr. D. A. Frank: A little over two thirds would pay for the instrument service \$28,541.00 compared with \$14,251.00. A. Yes, practically two-thirds.

(By Mr. Dule:)

Q. Mr. Pennell, why have you figured in here anything for an-

nual charges on the instruments?

A. Well, I was trying to find out what it would cost us if we owned the instrument,-if we were to own the instruments, and if we owned the instruments we would have to maintain them, and have to have a return of them, and have to lay aside something for depreciation and I have estimated as nearly as I can what those charges would be.

Q. Exactly as you figure the annual charges on any other por-

tion of the company's investment here in Houston?

A. Yes, sir.

The Master: You figure the depreciation charge on instruments of that character higher than ordinary, don't you, in other words, on account of the fact that the apparatus depreciates more rapidly?

A. It does. Yes, Sir; Perhaps one reason is this; that the turnover is very rapid, that is, the instrument put in at the stations, stay in on an average less than a year and come out and are then carried back to the office, and that handling submits them to a good deal of damage, and also, they are part of the instrument which is used and they are subject to considerable damage. You see, with a reserve for replacements of eleven per cent, that is, about a nine

years' life to the instrument, and, I doubt, considering, not 649 only wear and tear but obsoleteness which would take place

if we owned the instruments and which takes place in any event, I don't believe a nine year lift is too short a life, if anything, it's too long.

(By Mr. Duls:)

Q. I think the Master had in mind that these instruments are rather delicate and the depreciation for that reason would be higher than they conduit?

A. Oh, I see, it is much higher, of course, than underground con-

duit. Now, underground conduit goes in the ground-

Mr. Howard: Obviously higher than permanent parts of our plant.

Mr. Howard: Why should it be? Take up one of those things and show us besides obsolescence what would wear out?

A. One major factor is the obsolescence factor.

Mr. Howard: Aside from the obsolescence, that material looks

to me to be very durable material.

A. The button in here, (indicating) that part is called a button, and the carbon in that gets packed and it won't talk right; if that carbon gets packed the transmitter won't talk properly. You asked me for some of the ways in which these would wear out,-the character of the carbon in this button changes, becomes packed, and the instrument won't talk properly.

Mr. Howard: You have a repair charge charged up for that?

A. No, that would be depreciation,—the chances are when that is

done the whole instrument would be junked.

The chances are that when you dis-assemble this instru-650 ment, rather than go to the expense again of putting it together - that you would have a type of instrument which would be somewhat improved and it wouldn't be worth while. Then you would junk it and use the new instrument. Lightning will get in a line sometimes and burn the instruments out, that happens quite often, or you drop an instrument and break it. I don't know, there are a great many ways in which an instrument can be injured.

(By Mr. Duls:)

Q. Anybody looking at that transmitter and receiver can tell that's a more delicate part of a telephone plant than a conduit, can't they. Mr. Pennell? Are the adjustments, the different materials, in the transmitter there, for example, carefully adjusted?

A. It is sealed up and you are not supposed to adjust it. The men in the field are not supposed to adjust it; they are not skilled

enough to adjust it; they are adjusted in the shops.

Q. What happens to that instrument if it is used roughly and an accident happens to it,-if anybody takes and throws it out of the window, gets mad at the service they are receiving?

A. I couldn't tell you. There are various things that might happen. The chances are it wouldn't talk right after it had been treated that way.

Q. Mr. Pennell, these figures apply specifically to the Houston Exchange?

651 Q. That is, as to the number of instruments which the Southwestern property has to have here in the Houston ex-

change, to render the service?

A. Yes, they were of this date, October 1st, 1919. Since then the exchange has grown and different figures would apply if we were making an exhibit of exactly this date. Of course, the per station figures would be practically the same. I understand that the general staff of the American Company has developed a device known as a telephone repeater which is furnished exclusively to the Bell Company under this license arrangement.

Q. Will you tell us what that device is and what its use is?

A. The telephone repeater is a device which takes an attenuated or a weak telephone current at one end and puts additional energy into the current so that it comes out at the other end with more energy, but with exactly the same wave form of putting it in more every day language, it is a device which takes a whisper at one end and turns it out at the other end a full grown voice, but yet the voice of the speaker.

Q. Are there any repeaters here in Houston?

A. Yes, there are two repeaters in Houston. This device is a wonderful sensitive device and you can use it over and over again in tandem. And I understand they have taken an almost infinitesimal current which is on a telephone line and put it through this device a sufficient number of times until it was of sufficient magnitude to light an incandescent lamp, and yet the shape of the wave, which

represents your voice isn't changed at all.

652 A telegraph repeater has been known and in use for a good many years, but a telephone repeater has been unobtainable until the last three or four years. Mr. Glidden, about twenty years ago, was President of the Southwestern Company, President of the Erie System, and he recognizes the demand for a repeater and he offered a reward of a million dollars to the person who developed a satisfactory repeater, but no one worked it out, and the reward went by default, and it was only in the last three or four years, I think it was about five years ago, that the telephone repeater was developed by the engineers of the Research Department and became available to the Companies in the field. I have got a picture of what a repeater, the apparatus in a repeater, looks like. You may like to see it. Mr. Howard might like to see it. are some insulations up stairs. Now, the real duds of the apparatus—the real heart of the apparatus, is this bulb here. This is what does the work. It is a highly—it is a high vacuum inside here, certain models arranged in a certain way, so that this in connection with all these relays constitute the repeater. This corresponds to the transmitter you might say.

Mr. Duls: I want to offer this as Plaintiff's Exhibit No. 148.

(The picture thereupon was received in evidence, marked "Plaintiff's Exhibit No. 148, Witness Pennell" and is filed herewith.)

653 (By Mr. Duls:)

Q. Who owns the bulb and socket?

A. There is a socket this fits into. I haven't got a socket. This is owned by the American Telephone & Telegraph Company; they give us the use of it just the same as they give us the use of the transmitter, the receiver and induction coil. And in case it wears out, it has a life something comparable to an incandescent lamp, something like two hundred hours' service, and you can then return these to the warehouse just the same as we do the transmitter and receiver, and they furnish us a perfect one.

Q. Do you know what the cost of that bulb is?

A. I don't know,—I haven't any idea. The greatest part of the cost must be in the development cost and patent. It looks very simple, but represents an enormous amount of study and development, in fact, I know personally that for twenty years several engineers have been working continuously trying to get a telephone repeater. When I first entered the telephone business, engineers were working on it and those engineers worked continuously on iy, and it was only in the last five years that they succeeded in making this perfected device. There is necessity for very high voltage in the bulb and I think the voltage is higher than in the electric light. I don't know what the metal is. The composition of some of these grids and plates is kept a great secret, I think.

Q. Do you consider the use of these repeaters to be of any value

to the telephone system here in Houston?

A. I think they are of very great value.

Q. In what way?

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A. I can perhaps illustrate this by this map that I have prepared.

Mr. Duls: He offers this as Plaintiff's Exhibit No. 149.

(The map was thereupon received in evidence, marked "Plaintiff's Exhibit No. 149, Witness Pennell" and is filed herewith.)

A. You will locate Houston on the map. The area shown in pink was the area within which you could get what you might call Commercial transmission from Houston prior to the advent of the telephone repeater. That is the area in which you can get a perfectly good connection, that is probably not good to the Border, but generally that represents the area in which you could get, as I say, what you might call commercial transmission prior to the advent of the repeaters. Now, in the yellow is shown the area that you can get commercial transmission with the repeater. You see it takes in all of the United States except the piney woods of Maine, and also takes in a little of Canada. Now, the use of this repeater has extended the range of transmission from every telephone in Houston that amount, and it seems to me that that is of great value to the telephone subscribers, even if they don't use the telephone; they

want to some day use a telephone badly, maybe,—there is that potential possibility from every telephone. I had an illustration the other day. I got a wire that my mother was very sick, and I called for the first time, I happened to make this call to New Hampshire, where she lived, and I would have given most anything for that connection—from Saint Louis,—and it talked beautifully. I got discouraged—discouraged news and it was interesting to note that the violets at that time were blooming in Saint Louis and the doctor had to go to his patient on snow shoes in New Hampshire. It brought home to me the distance I was talking. It is also an asset to the City of Houston to be put on the telephone map. Houston can be reached from any point in the United States. I know what this—

Q. (Interrupting.) Pretty soon the people of Houston will be

able to talk to Havana, Cuba?

A. Yes, they are stringing a cable now from Key West to Cuba, and that is connecting with the telephone system in Cuba.

Q. Who is dong that?

A. The American Telephone & Telegraph Company are stringing the cable,—it is a wonderful piece of engineering because the cable has to be laid under the ocean and has been laid at intervals so that it will carry speech and when that is done why, we can talk from Houston to Cuba as well as you can go talk to New York, or any other distant place. One very interesting feature is that one very often talks over long distance better than he talks closer to home. I have

often noticed that in talking to New York. I talk to New 656 York quite often and I know sometimes I think the man is talking close to me, and I sometimes think that he is in St. Louis, because it is so distinct. The reason why these long distance calls are clear is because you get a lot of these (referring to the repeaters) in them.

Mr. D. A. Frank: What do you mean by "these"?

A. These telephone repeaters. This repeater, you understand, is a patented article and it is available only to Associated Bell Companies, none but Bell Companies can obtain the use of this repeater.

(By Mr. Duls:)

Q. And they obtain the use of the repeater under this four and one-half per cent payment?

A. Yes, sir.

Q. The Southwestern Company receives the use of it?

A. Yes, sir.

Q. Mr. Rhodes has shown us the organization of the Development and Research Department maintained by the American Company for the purpose of assisting the Southwestern and other Bell Companies. Can you mention some of the specific work which this Research Department has done for the Southwestern Company?

A. Yes, sir,—this Research and Engineering Department is a large Department; there are something like five hundred persons in it,—a great number of which are Engineers,—scientists and investigators of the very highest type. They are work-

ing all the time on problems of research and development for the benefit of the Associated Companies. The Associated Companies

cannot do this work. The Southwestern Company cannot afford to have a Department as large and elaborate as this Department. can have a research department, but it would, of necessity, be s small one; and likewise, with all of the Associated Companies, they would work, more or less, at cross purposes,-they would duplicate the work to some extent. No company would be in a position to avail itself of the experience of all of the others, so as a result all of the Associated Companies maintain this Cental Department of Development and Research, which is working for them,-developing new devices in the telephone field, and the Associated Companies get the use of those devices without any other payments than the four and one-half percent payments. Now, the history of what this Department has done is largely the history of the Development of the Telephone in this country. I do not mean to say that they have made all of the improvements,—they haven't. Improvements, a number of them-some of great value, have been developed outside of it, but taking it all the way through, they have developed the greater number of the big things,-a greater number of the big things in the telephone business than anyone else.

Q. Do these improvements and developments affect the users of

the telephone here in Houston?

A. Yes, sir, they affect us in a great many ways. I will outline some of the work that has been done. Perhaps,—well, to start with, some of the old work—it is ancient history and perhaps many of you have forgotten it. The only kind of wire that will carry speech for any considerable distance is copper wire. When copper wire was first used, it did not have the tensile strength to stand upon the telephone poles,—the only kind of wire was soft-drawn copper wire. The Associated Companies were up against the problem and the Engineers of this Research Department went into the drawing mills, rolling mills, and developed a hard-drawn copper wire which is used all over the country, and it is used in Houston today. Without that development, the long-distance telephone would be impossible.

Q. Is this hard-drawn copper wire used in the exchange service

here in Houston?

A. Yes, sir.

Q. Al- right. What other developments?

A. That, of course, was developed years ago. I don't think it was ever patented, and if it was, the patent has long ago expired. The common battery was developed,—the common battery telephone system was developed by this Research Department and given to the Bell Companies; before this, the magneto was the only one know. The development of the common battery system was a big advantage, a big advantage in this,—two or three things; first,—it automatically signals the central office, which enables the operator

to supervice each connection more rapidly and she can handle a great many more calls than with the magneto system. It is a cheaper system and the subscriber gets better service and you don't have to maintain batteries at the instruments which cheapens the maintenance. That development of the common battery system was

the development of this Engineering staff, and before they worked it out there was no such system known.

The Master: Why don't you put that scheme in in little towns,

Mr. Pennell?

A. The reason is this,—it is difficult to draw the line just where this system is economical, probably an exchange with about four or five hundred local subscribers, but in these little towns we have a large percentage of rural lines, country lines, and we can't work this common battery system on those very well, because the lines which go out through the country run through trees and hedges very often and are very often owned by the farmers and are not maintained, and a common battery system will get crossed on the line; in other words, it isn't economical, -costs too much, -and the subscribers, on account of the excessive trouble we have in these small places, it wouldn't be so satisfactory to him unless the telephone company went to other expenses, which would make the rate higher than the rate should be, so that in a small town the most modern way of giving telephone service today is with the magneto system, but that's only in small places. I can remember when New York City was magneto, and I can remember when they began to change I also remember when Philadelphia was magneto and

Another line of work which this Re-660 they changed it over. search Department has been doing has been developing a When the telephone exchanges were first built the telephone cable. circuits were strung in open wires on poles, and one of the things a telephone manager pointed to with pride when you inspected his exchange was his office pole; they would have up in front of the office a pole fifty or sixty feet high which would have ten or twelve cross arms on it, and that was his office pole. There was a limit, though to telephone construction of this sort; you were able to put only a certain number of open wires on a pole, and then it becomes fully loaded,-you can't get any more on it, and so it was necessary to bunch these wires, -some sort of cable; the only cable known at that time was a cable with a rubber insulation, but you can't talk over any distance over a cable with rubber insulation, as at the offices at the other end it sounds muffled,-as the tones get out of the cable if it gets long enough—and you can't hear anything at So the engineers of the Research Department went into the matter of finding an insulation for wires with paper, to get a cable that would talk better for a considerable distance.—and they developed what is known as a dry card paper cable. First, this cable was made in sizes of perhaps one hundred pairs of wires in a cable, and then, as the number of subscribers increased, the need for larger cables became evident and that increased the size of the cable to a maximum of, perhaps, three hundred pairs,

but they could not increase them any larger than that because of the conduits which go under the ground, in which the cables are built, did not have a sufficiently large diameter while the cable itself mught have a larger diameter; but would be hard to handle when you rolled it up, that is, a cable with about three hundred pairs of wires, which was known as 19 gauge wire, and was as big as any cable you could get. Then they developed what we know as a fine-wire cable; they decreased the size of the wire by onehalf, using what we know as 22 gauge wire, and by that means they were able to get a cable which would carry as high as 900 paid in a sheath of the same size. That, of course, lessened the cost of the cable, -- both because it had less copper and had less lead Now, that saving has been very considerable in for each pair. Houston; the cable plant, alone, represents an investment of something like one and one-half million dollars. You can see yourself how, in the same size lead pipe, you could get twice as many wires. All that had to be studied and developed very carefully.

Q. Now, those advantages the Douthwestern Company partici-

pated in?

A. Yes.

Q. And participated in it to the extent of being able to render

better service in the City of Houston?

There is still further development on this cable which is going on and which we will avail ourselves of probably in a short while.

662 They have decreased the size of the wires still more and and are going to use 24 gauge instead of 22. We haven't I don't believe put in any 24 gauge at the plant in Houston, because the development has just been finished, but by the end of the year we will have some of that wire in in Houston and from now on will have a very considerable saving from that source.

Q. How many pairs of 24 gauge cable wire can you get into a

cable?

A. You can get twelve hundred pairs of 24 gauge wire. Now, that is just about out of the hands of the Development Department-Research Department, and they are starting now on developing a 27 gauge wire. That will take, probably, three or four years-and may be if we have another rate case in three or four years, we will talk about 27 gauge wire—which will be available but isn't available now. Now, the development of this cable has not been limited only to the gauge wire, but has included the sheath, the pipe which the wires are put in. The first sheaths we ever obtained were made of pure lead, but pure lead if used will shortly crystal-ize and crack and dampness, moisture, will get into the cable and the cable has to be repaired or taken up. A large part of the cable used by independent companies is pure lead sheath. When we bought the Automatic Exchange in Houston, a good deal-a large amount of the cable which went into the plant had pure lead sheaths. Here is a sample of the sheath taken out of the plant in Houston, showing that it

had crystal-ized. This is the inside of the sheath, where you

663 see these knest.

Q. Is this a part of the Houston Home Telephone Company's cable?

A. Yes, sir.

Q. And if any moisture gets into the cracks in here, the lines won't work?

A. Yes-now, the engineers discovered that an alloy of three per cent tin and ninety per cent lead remedied that trouble, and-

Q. (Interrupting.) What engineers?

A. The engineers of this Development and Research Department of the Bell Company. We used this cable with the alloy in the sheaths, but the price of tin went up twenty-three per cent and that was a very considerable item, and so they looked around to obtain a new substitute, and they found, in making a great many experiments and trying a great many alloys, and putting it on a cableboth cable in ducts and out—that an alloy of one-half per cent antimony and 991/2% lead would answer the purpose of the lead and tin alloy, and so the cable we are getting now and have obtained in Houston, for the last three or four years has had this antimonylead sheath.

Q. That's better and lasts longer?

A. The sheath is just as good as lead and tin and the cable is about 8% cheaper. Now, this development work on cable is going on all the time. These engine-rs are working for us on these problems all the time, and just as soon as they get anything which is of

value, they give it to us and we profit by it. It was interesting to note that just before I left St. Louis I got a letter on 664 cable, which shows how much in detail they are going into

some features of it, and I will just read the letter. There has been quite a lot of trouble in Houston and all along the sea-coast in Texas and Southern California, and along the Gulf Coast generally, from small holes being bored in the sheaths, and a lot of the trouble is caused by an insect or bug and this is a letter which, as I understand—it is short and it will indicate to you somewhat how much in detail they go into the matter.

Q. You mean a sort of boll weevil attacking the cable?

A. Well, I have got the name of the insect. It has a highly technical name. Here is the bug. (Referring to a bug in a bottle.)

Q. What is this, Mr. Pennell?

A. Why, that's the bug that bores the hole in the cable sheath, and this is what the hole looks like after he has bored it. And this is where a bug bored a hole in a twisted-pair wire. The engineers developed this study, and they put a bug in a lead box to make sure that it was the animal that was eating the cable, and it dug its wayit dug its way out. The photographs show that in the corner of the lead box it ate its way out.

Q. Did the Engineers of the General Staff conduct these experiments?

A. They conducted it in connection with the entomologists of the Department of Agriculture. Now, I will just read you this letter,

which will show-it is interesting because it illustrates just 665 how far they have gone into a little detail like that. We have told them about this trouble and sent some samples of lead

sheaths, and this is what they said:

"Several months previous to the receipt of your letter of June 6th, 1918, reporting on cable troubles, due to the boring of the sheaths by beetles, we have started, in co-operation with the Bureau of Entomology, an experimental investigation of the problems connected with this subject. This co-operative work has been carried on in experiment stations at Falls Church, Virginia, and Los Gatos, The experiments have necessarily been restricted to short periods each summer, when the beetles which cause these injuries had emerged from the pupal form, so that rapid progress has not been possible.

"In the testing cage at Falls Church, short lengths of cable were suspended, using all of the common varieties of sheaths and all methods of hanging cable which are currently employed, as well as representative types of previous standard methods. No direct observations of attack on these cables were obtained, but considerable evidence was gathered both at Falls Church and at Los Gatos, indicating that successful boring of the sheath was dependent upon the beetles getting a foothold on the cable hanger, or on some roughened

surface.

That was interested to me, because it showed the beetle had to get a purchase to push down in order to bore the hole, and that's what our people found, that wherever they found these holes, the 666 surface of the sheath was roughened or loose here where the cable rings were. (Continuing reading the letter:)

"In view of these observations, we are now considering several variations on methods of hanging cables which appear to have possi-

bilities of preventing insect attack.

"Observations have also been carried out by exposing sheaths made of pure lead and a variety of lead alloys to attack by the beetles. During the last season a fairly effective method of making these observations was devised. The results of this work have been negative, so far as the discovery of a cable sheath alloy which would be immune to attack is concerned. There are, however, a number of methods of treating the cable sheath surface which still require investigation, and it is planned to cover these during the next season.

"In connection with the study of the cable sheath alloys, we had ten of the twelve samples sent us with your letter, analyzed. other two of the twelve samples were omitted, because the locations as to the locality from which they were taken indicated that they probably came from the same length of cable as other samples.

The ten samples were found to divide as follows:

"Three were antimony alloy sheaths and three were tin alloy The remaining four were of non-alloy type. While it would appear that the proportion of the plain lead sheath samples which showed perforation is greater than the proportion of this type of cable in the plant, you will note that both our past and present standard alloys also appear in the lot. 667

"In connection with this matter, I should be interested to get from you information as to whether this trouble also appeared during the rainy season of 1919, and if so, the number of troubles for each locality, suffering from the attack."

Q. Now, that was a letter written to you, as Chief Engineer of the Southwestern Telegraph and Telephone Company by the Engineers of the General Staff?

A. Yes.

Q. Telling you the results of their research and experimental work on this bug attacking the cable?

A. Yes.

Q. A trouble which you had experienced here in Houston?

A. Yes, sir, and from it you get an illustration of the amount of detail in which they are examining and studying every portion of the telephone plant.

Mr. Duls: We offer this picture: "Head of cable bug, magnified 35 times, to show boring nippers" and photograph of "Observation box made of lead, through which cable bug bored its way";—these as Plaintiff's Exhibit No. 150.

(The photographs were thereupon received in evidence, marked: "Plaintiff's Exhibit No. 150, Witness Pennell" and is filed herewith.)

668 Mr. Duls: And this photograph of "Scobicia Declivis Lec., or Cable Bug, magnified 15 times," and picture of "Scobicia Declivis Lec., or Cable Bug, magnified six times" as Plaintiff's Exhibit No. 151.

(The photographs were thereupon received in evidence, marked: "Plaintiff's Exhibit No. 151, Witness Pennell" and filed herewith.)

(By Mr. Duls:)

Q. Me. Pennell, is this a male or female bug, doing all this boring

and causing all this trouble?

A. A female bug. I understand it is the habit of the female bug to bore in wood and make holes in which to lay her eggs, and this is a female bug and I presume it is boring to lay the eggs, but cuts the sheath of the cable instead of wood.

Q. What percentage of cable trouble here in Houston is caused

by this bug, spproximately?

A. Why, I was looking over Mr. Grauer's record of cable troubles and while there may be some mistakes in the classification of the troubles, it isn't always easy to identify a hole in a cable as being caused by a bug,—but with the classification he has made, which comes under the head: "Holes in Cable Sheaths"—something like between one-fifth and one-sixth are caused by this insect.

Q. Something like twenty per cent?

A. Yes, sir. That's in Houston and Galveston and apparently doesn't get very far away from the Coast and confines itself to the warmer latitudes.

Q. The work of the General Staff of the American Company, in trying to remedy this trouble for you, is an example of one of the services that you receive under this payment to them?

A. Yes, sir. I mentioned it just on account of the interest which attached to it as illustrating into what minute detail their services

went.

Q. Have you any other services in mind, with respect to Engineering Development that has been of benefit to the Houston ex-

change?

A. This Research and Development Corps of Engineers are working all the time on nearly every part of the telephone plant on developments which will be of assistance to us in the field. One line of work which they have worked on continuously—really ever since the business started up,—is the telephone switch boards. I mentioned the fact that they developed the common-battery system; they developes the multiple system, the multiple switch board, whereby each operator has before her the multiple of each subscriber, so that she can make connection with any line in the office. They have made improvements on nearly every peice of apparatus which goes into subscribers' sets. They have developed automatic ringing on the trunk boards, whereby the trunk operator, by inserting the trunk plug in the jack the ringing of the subscribers' station will automatically stop and continue at intervals until the subscriber answers. They have developed new types of line and—

Q. (Interrupting.) All these different things you have men-

tioned are used here in the Houston Exchange?

A. Yes, sir,—everything that I have mentioned is. They have made a very important improvement in the telephone cord,—the cord is flexible and is the contact which the operator uses in making the connection. I just brought that here as an illustration of what the cord was.

(The witness here exhibited a cord.)

You can see, she makes a great many connections in a day, and every time she makes a connection the flexing of that cord must be employed, and the wire inside broke off,—and if that happened, or if it become partly broken, the connection will suffer a good deal. A study was made on that subject by the Development Department, and the old cords had a life of about four months. They developed a new type of tinsel to be used in the cord, so that the life of the cord now has been extended to about two years.

Q. When you say "Development Department"—you mean the

Development Department of the American Company?

A. Yes, sir,—I am talking about this group of engineers that is working on these problems all this time. They have been working a considerable length of time on the development of an automatic switch board; to my knowledge they have been working on the development of the automatic switch board for 15 years, and it has only been recently that the board has been developed to the point where service can be given with it which

would be as good as the manual service, and it has only been recently when the labor costs have increased greatly, that the automatic board could furnish service as cheaply as the manual board, and there has been, until very recently no satisfactory way

of starting an automatic board in an exchange where there is manual equipment and having the two boards work in connection with another. And that is obviously the only way in which we can introduce the automatic system in the larger exchanges, because it is physically impossible to replace all the manual equipment at one time. Now, this Research Department has developed a emthod whereby you can inter-connect the two boards, and the automatic subscriber in the exchange can put in his call for any subscriber in the exchange be he automatic or maula, and he won't know the difference unless he happens to know that such a number if automatic and such a number is manual; in the same way, a manual subscriber can talk with or call any other subscriber in the exchange and he won't know whether he is getting connection in the manual office or automatic office, and this improvement in the automatic boards will be available to us in Houston when we are in a position to require it. It is a problem which will require a great deal of study; the introducing of automatic equipment in Houston or any other large exchange, is one which is going to take years, and will have to be gone into gradually-for a great many reasons,-financial, physical and engineering.

Q. Are there any other services of the General Staff in the En-

gineering Development Work that you want to mention?

A. Yes, sir, there has been—there are a great many other services. I have told you very briefly about the development of the telephone cable. Now, you can talk through a dry core cable at a certain distance very satisfactorily, but beyond that the voice be-

comes muffled and you can't hear at the other end. Servian boy came to this country and became Professor of Physics at Columbia University, and he developed a method of placing impedence coils at intervals on the cables. When these coils are placed on the cables, you can talk through a much longer cable than you can when the coils are not placed on them. That invention was purchased for the benefit of the Southwestern Company and other associated Bell Companies, by this Department of Development and Research, and they took that in its experimental stage and spent quite a lot of time and work on it and it is used in all of the large cities of the country. Those are the cables that you talk over in long distance, and the cables require much less copper than they otherwise would do. There are loading coils in Houston-not very many loading coils in Houston. You don't get very much advantage from this development yet,—Houston is not quite large enough,—the exchange doesn't extend over a very large area-but in a few years, if the city expands, these coils will be of very considerable value to the City of Houston. They are used here now and are beneficial, but not very many of them.

Q. In other words, the Houston Exchange receives the benefits of

the studies made by the General Staff on that subject?

A. Yes, sir, and another development which is a quite recent one,—it may seem like it is trivial, but it is really of considerable importance,—is a new type of carbon which is used as a pro-

tector in subscribers' instruments; every instrument which you have in use outside of the down-town district, where the wires are entirely underground from the office to the instrument, there is a protector, and in these protectors there is carbon for the purpose of taking the lightning discharge, and very often after a storm the line will be in trouble and you will have to go around and replace them; it isn't so much the cost of replacing, but it is a detriment to the service when a line is out. Now, that device has been developed,—it has taken a long time to do it,—that practically eliminates this carbon t-ouble and yet that arrestor is just as efficient as

Q. That arrestor, was developed by the General Staff?

A. Yes, that's just on the market now, that is, we are just getting them in quantities this year, and I presume are beginning to place them in Houston this year. If they aren't, they will be before the end of the year. I mention that just as an illustration of one recent development which the General Staff has made. Now, there are a lot of other things which relate to the whole plant and don't affect the Exchange in Houston, except in so far as its toll connections are concerned.

Q. But all these matters you have been testifying about, hard-drawn copper wire, cable, switch boards, and switch board cords,—the automatic board and the lightning arrestors or current arrestors,—they are all matters—they are all material used here in

Houston?-As distinguished from the materials used on the

674 toll lines?

the other protector.

A. Yes, sir.

Q. And all of them are of direct interest to the service here in Houston?

A. Yes, sir. If you would like, I will illustrate some of these improvements on the toll plant—some of them are rather interesting.

Q. Can you just mention them and give a list of them, Mr. Pen-

nell, without going into them?

A. Yes,—that can be used both on toll lines and on the exchange

lines.

Q. Now, applying this service specifically to the Houston Exchange, have you prepared an exhibit showing the actual savings of the Engineering services, as directly affecting the Houston Exchange?

A. I prepared an exhibit which shows-

Mr. Duls: We offer this as Plaintiff's Exhibit No. 152. 23—219

(The statement was thereupon received in evidence, marked "Plaintiff's Exhibit No. 152, Witness Pennell" and is filed herewith.)

A. I have taken just some of the improvements which we have been able to get on account of this research work and I have figured out what it would cost us to duplicate our plant in Houston if we had not been able to avail ourselves of these improvements. I can explain this exhibit I have taken the amount of cable which I have described as fine-wire cable in Houston. I took the figures from the inventory, and I find out what cabke would cost if we had not been able to use the fine-wire cable,—that is, if fine-wire cable had been replaced by the cable which we formerly used, and I took the difference and in taking the charges on the difference, I find that had we been obliged to use the older type of cable in constructing the plant in Houston, it would cost \$104,000.00 a year more. way, it is obvious that if you can get more wires inside of a cable of a given diameter, you don't need so many ducts in your underground, and figuring the annual saving, duct saving, I get \$17,-300.00.

Q. The saving on the improvement in cables alone is over two times as much as the payment by the Southwestern Company for

the services?

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A. Yes, sir, and then the saving on account of the development of this new antimony lead sheath, which is, practically speaking, with per cent; we haven't very much of that sheath in the plant at Houston, because it is a recent development, but taking that cable

which we have in the plant and estimating what it would have cost with the former alloy, and taking the annual saving on

that, I get a figure of \$2,200.00. Likewise, I estimated what it would cost to maintain and replace the former type of switchboard cord and the extra cost of maintaining those cords in the plant would be \$14,100.00; so that this estimate of what it would have cost us, had we not been able to avail ourselves of these developments, just on these four items, amounts to \$138,100.00.

Q. Over three times as much as we pay for the service?

A. Yes, sir,—something like ten times as great as the payments for all the other service, other than the instruments service.

Q. Does the Southwestern Telegraph & Telephone Company use any device made under patents owned by the American Company?

A. The American Company has something like five thousand active patents. These patents cover devices which go to the—these patents cover devices which have not expired and are active. These patents cover devices we are using and devices which we don't use, but which we may use,—that is, the product, the field for development in the future, as well as protecting us on the devices which we do use. There are a great many articles which we use in Houston which are made under patents that are owned by the American Company.

Q. Does the American Company, under this Licensee arrangement, permit the use of these patents without further payment on

the part of the Southwestern Company?

A. Yes, sir,—one of the privileges of this arrangement is that we have the full use and protection,—patent protection. If there should be any lawsuit, they would defend it. I think one of the witnesses, Mr. Kelsey, mentioned the fact that an 0. K. Kellogg, switchboard, had been replaced on account of some

O. K. Kellogg, switchboard, had been replaced on account of some patent litigation. I have never known, in my experience, of a case of litigation,—but I presume there have been cases but I have never known of any.

Q. Do you know whether or not the General Staff maintains a

legal patent department in New York?

A. Yes, sir,—they have a well developed patent department which handles these matters and it is specifically important just at the present time because there are so many new developments which are going on,—developments which, within the next few years, are going to be more important perhaps than they have been in the past, and we are going to get the benefit of them.

Q. Of course, there are patent articles on which the American Company owns the patents that are used here in the Houston Ex-

change?

A. Yes, sir, there are lots of them. Some of these patents cover devices which the Western Electric Company sells on the market to everyone; others of the patents cover devices which are licensed to be sold only to the Associated Companies, and still other devices which protect the development. I know that large sums of money have been spent in the last few years in acquiring patents to protect the development of automatic switch boards. All the expense,—the work and expense of the development work,—is borne by this

Development and Research body, and the only contribution we make towards it is the same as all of the Associated Com-

panies,—the 4½% payment.

Q. What can you say, Mr. Pennell, as to the benefits of the standardization work carried on by the General Staff of the American

Company?

A. There has been a great deal of benefit to us by reason of this standardization work. Everywhere you go over the United States you will see in the Bell plants the same type of material, the same type of construction. The same methods are used. This standardi-

zation may, perhaps, be analyzed something as follows:

First. There is the economy which is obvious; it would be very unsatisfactory to have one type of cross-arms in Houston and one in Dallas, and a different type in every exchange in Texas; and likewise, it would be foolish to have a different type in use by each of the Associated Companies. The Research and Engineering Department studies the types, selects the best types,—keeping in touch with all of the Associated Companies, and getting the benefit of their experience, and that result- in economy in the manufacture of that material, and also results in our getting the best types, and so you have two advantages—that of economy and efficiency,—because you have a standard thing, the best type, and that particular method will give you the best results; and so, also, you have another advantage,—that of availability to supply,—the supplier knows that

it is a standard type of cross-arm, and a cross-arm press or manufacturer can afford to carry a larger stock of that standard type than if you used ten or fifteen or twenty different types.

Then, there is another advantage in the cost of manufacture. The forces are all accustomed to its manufacture and use the same methods and same types of material. For example, if you should have a buyer in Houston and a switchboard should be destroyed, switchboards would be shipped in here by express from other points matched up with the switchboards in Houston, and workmen would come in and would know how to install the boards, because you have the same type as the boards in Houston, and so you have all of these advantages in the standardization. Now, this Research and Engineering Department has done an enormous amount of work in the standardization of materials, supplies and methods, and they are, as I said, pretty well standardized in Texas, and to get an idea of the magnitude of this in Texas this year, we will probably use something like two and one-half million dollars' worth of material in our telephone construction; and if there is a saving in this standardization of one per cent.—I don't know what the saving is, but I know there is a saving, but I don't know whether it is 5%, 1% or \\frac{1}{2}\%,\to but if there is a saving of one per cent, that saving this year alone will be \$25,000.00 in Texas. Now, the Southwestern Company could standardize its material, but couldn't standardize for the whole coun-

Q. Mr. Pennell, what effect has this standardization had on the

services rendered here in Houston?

A. Standardization undoubtedly results in a better type of plant, and if you have a better type of plant it must be reflected in the service. Several of the witnesses whom I have heard here,—Mr. Kelsey and Mr. Allison,—and I think several others, have remarked upon the good character of the plant in Houston and one reason for this is the fact that it is standardized. One feature in connection with this standardization which I mentioned—perhaps I could mention it a little more in detail—

Q. (Interrupting.) Do you know anything about the telephone

service in Paris,—it has been referred to a few times.

A. Why, in Paris, France,—not Paris, Texas,—they allowed each subscriber to buy his own type of instruments and suppliers got after the subscriber and wanted to sell their instruments. This resulted in many different types,—between two and three hundred different types of instruments and you can imagine the condition the telephone company was up against. Repair men had to have parts to repair all those different types, and the chances are that when they went out to repair an instrument, they wouldn't have in their hand-bags the repair parts, and the chances are they would not understand the secrets and so finally, the Government interfered,—saw that something had to be done,—and limited the number of instruments which subscribers could use.

Q. If they had had standard apparatus they wouldn't have had

that trouble'

A. No, sir,—that was an actual occurrence, and exists today, so I understand.

Q. Al- right,—go ahead.

681 A. I was going to mention this fire service. I have been through a number of company fires. Now, this is what happens,—when a big unit in a city burns down, and this happens because the Bell System and the standardizationed material and this General Staff which helps us out. A fire happens; there is a fire switch board kept in Chicago by the Western Electric Company, all the time,-it is setting there awaiting a fire,-it is there for that purpose, that board is shipped by express and workmen are rushed in from all surrounding Bell Systems, and if there is any question of credit at issue, that matter is looked after by the American Company and there is no question and no hesitancy because of any lack of If there is any question of a great amount of engineering to be done at once and the local company isn't able to do it, then this General Staff of Engineers will do that engineering for you-will help you out,—and the result is the service is restored just as quickly as is humanly possible to have it restored. That was the case when the main office in Kansas City burned down, and was the case in all fires I have known about,-in Philadelphia, and especially was it so in the big earthquake and fire in San Francisco, and the fire in Baltimore.

Q. Bringing that nearer home, did you know anything about the

fire the Southwestern Company had in Paris, Texas?

A. Yes, sir, there was a fire there.

Q. And in Austin?

A. And in Austin. At Austin, for example, our building was burned down on account of a fire in an adjoining building and a brick wall, I think, fell in our oue switchboards,—but in

of the State. We have in my office an emergency list of telephone apparatus, and we immediately as soon as we learned of the fire, got in touch with the people in Hawthorn, and I don't know, but in an incredibly short time a switchboard was on its way to Texas. Now, in this particular instance, this is what happened: For some reason or other, I don't remember the detail,—but the fire board wasn't available,—wasn't the right type, for Austin, or had been used for another fire shortly before,—in any event, it wasn't available, and the Western Electric Company reached out and took a board which was ready to be shipped to another Associated Company and shipped it down to Austin to take care of the emergency. Of course, that was taken up with the Associated Company and they were willing to let it go, because this was the greater emergency

Q. How is this standardization work and the result of that work, and of the research done by the General Staff of the American Company, received or presented to the Southwestern Company?

A. One of the chief ways of presenting the results of that standardization work is through specifications and handbooks—circular letters. There are specifications written for practically every bit of material that goes into our plant. We buy it under that specification, it is generally inspected under that specification, and we know we are getting just what we want. It is a question of standardization

and the way they do the work, and it is fully presented in the 683 hand-books, so that an employee can see a picture. hand-book will have a leather cover and be full of diagrams. We find that the employees will look at a picture and see how a thing is done very often when they won't read a long description.

Q. Now, Mr. Rhodes showed us several of those hand-books. A. He showed them, and may be Mr. Howard didn't see them here. I have some here and you can look at them. You will see

that it is full of pictures.

Mr. Duls: I would like to offer this as an example of the handbooks that you are speaking of, same being: A. T. & T. Co.'s Specifications 3850, dated March 1, 1917, entitled, -Sub-station Protector Installation,—as Plaintiff's Exhibit No. 153.

(The hand-book was thereupon received in evidence, marked: "Plaintiff's Exhibit No. 153, witness Pennell" and is filed herewith.)

A. Now, these hand-books are not evolved out of thin-air by some engineers in New York who are theoritical men; they represent the combined experience of all the Associated Bell Companies in the field. The first step of making them, the Research Staff gets in touch with the engineers in the field and gets the best ideas of all the engineers in the field; then there are these ideas combined into a preliminary draft and the hand-book then is sent out to the field for We comment upon it. It goes through that process comments.

perhaps several times, and finally gets in this form and represents the consensus of those minds on that particular line of work throughout the country. You can see that that character of work couldn't be done as efficiently as it is except in a central The linemen follow then exactly and discuss them among themselves,—the drawings and all that,—and our engineers generally before the construction forces have left the work inspect the work which the construction forces have done and see whether the work has been built in accordance with these hand-books, and if

it isn't they are asked to correct the work.

Q. That means, does it, Mr. Pennell, that the engineers and employees of the Southwestern Company actually use the information that's furnished in these books?

A. Oh yes,-but not in order to-

Q. (Interrupting.) Well, you are the Chief Engineer of the Southwestern Company, and you know that these books are used?

A. Yes, In order to show that they are used, I have had some photographs made of the work in Houston and put against those photographs the order out of the hand-book which was followed. course, these things are changing, as the rate of development has been rapid and we get new ideas in standardization, and probably some of these photographs might not show as standard in the handbooks I have shown you, which are the most recent hand-books, but they do show the standard which was the latest standard at the time the work was put up.

Mr. Duls: We offer this as Plaintiff's Exhibit No. 154.

(The exhibits containing the photographs referred to were thereupon received in evidence, marked: "Plaintiff's Exhibit No. 154, Witness Pennell" and filed herewith.)

Q. Mr. Pennell, what did you say that this exhibit shows,—this

Exhibit No. 154?

A. This exhibit shows views taken from various places in Houston, showing the telephone plant as it is actually built. On the same page, or on the opposite page of the exhibit, is a cut from the handbook which shows the method which the construction people followed. For example, on the first page,—page "A,"—there is a telephone cable which went close to an electric light wire, and it's protected with a wooden moulding like the Diagram 70.

Q. That Diagram there first appearing in one of the hand-books?

A. Yes, on the next page—"B" we see the way,—a photograph of a cable terminal on a relay cable, and we see how the cable terminal is placed on the pole,—how the splice is made between the top cable and the main cable, and if you compare that with the cut, the Diagram 76,—Diagram 75, the right hand cut, you will see that the cable-man has followed that diagram as closely as he could and see that through the other photographs. This exhibit was made to show merely that the men actually did use these books and followed the standards which we all agreed to.

Q. That is, the men employed by the Company here in Houston? A. Yes, Now, I have other examples of hand-books which show how this matter of standardization is presented by this Engineering

& Research Department to the Southwestern Company.

686 Q. Are these hand-books or circulars?

A. This is called a Traffic Circular, and is: "Local Operating Text Book." Each telephone operator repeats the same thing over and over again,—many times a day,—that is, she put- up the connection at the switch board and any saving in any one of her many movements,—I am speaking now of the phrases which she uses when she speaks to the subscribers daily, although in itself small, and perhaps insignificent, yet it amounts, in the aggregate, because the phrases are repeated again and again, means a marked saving; and consequently they have been gone over very, very carefully and there has been written this "Local Operating Text Book."

Mr. Duls: We offer this Traffic Circular No. 113—"Local Operating Text Book"—as an example of the circulars received by the Southwestern Telegraph & Telephone Company from the General Staff of the American Company on engineering matters, as Plaintiff's Exhibit No. 155.

(The circular was thereupon received in evidence, marked "Plaintiff's Exhibit No. 155, Witness Pennell," and is filed herewith.)

A. I could show a lot more of these, but I don't think—but I think Mr. Rhodes and Mr. Estabrook have shown them to you already, but I have prepared a list of some of the circular letters and certifications and hand-books which we have received.

687 Mr. Duls: We offer this as Plaintiff's Exhibit No. 156, the same being details of some of the circular letters and certifications which the American Telephone & Telegraph Company has prepared for the Associated Companies, copies of which have been received by the Southwestern Company, Houston, Texas.

(The exhibit was thereupon received in evidence and marked: "Plaintiff's Exhibit No. 156, Witness Pennell" and is filed herewith.)

A. It may be interesting just to look through that list and for me to talk about one or two little items. On the first page, under "Circular Letters" is the item: "Black Finish Desk Stands." refers to a development in the finish of the desk stands—the little They have a brass up-right and desk stands,-I think this is one. enamel black finish which is made of a certain paint; I think it is Murphy's paint—it is called; I am not sure of that, that wears off, expecially with some people, who have acid or alkali in their hands, and you will notice that the stands with some people wear off much more rapidly than others. Well, they developed a stand on which this is a steel upright, and therein was a saving, as steel is cheaper than brass and used a Bowerbarff finish. Now, when this Research Department was developing this desk stand, they wanted to put it in places where is was very damp and where there was saltair, and they sent some down,-the first batch down to Houston, and we had them here and in Galveston in our plants and observed them.

There were several types made of slightly different manufacturing processes and we had them in our plant here for, I guess, over a year, and we reported to the American Company, and finally took them out and sent them back; the same experiments were going on in other fields, where the climate conditions were similar, and resulted in the development of the stand now being used, but we haven't a large number of them yet in the plant,—this is an old type, I believe. These people are working all the time on this development for serving and improvements to us, and all of the Associated Companies pay for the work through our 4½% arrangement, and I think, really saves us for more than we ever put into it. I don't know that it is really worth while to go through the list. You can see that it covers every part of the telephone plant,—switch boards, pins, cross-arms, break-finders,—everything that you can think of.

Q. So that this information that is furnished by the General Staff of the American Company isn't of such a technical or impractical nature that it is of no real value to the Southwestern Company?

A. No, no, indeed; it is used in our work all the time.

Q. There isn't any big warehouse where the general staff of the American Company goes and gets this stuff out and ships it to you by carloads, is there?

A. No, sir.

Q. Now, Mr. Pennell, is that all you want to tell us about the standardization benefits received by the Southwestern Com-

689 pany from the General Staff of the American Company in return for the 4½% payment to the American Company?

A. There is another type of standarization which I would like to talk about just a little, and you might call that "national standardization." The company has developed to the point where there are interests which cover considerable area,—several States or the entire country,—which affect the telephone interests, and standardization of a rather national type has to be carried out, and this staff of engineers represents the Southwestern Company in the carrying out of this kind of standardization. They don't do it arbitrarily. They get in touch with us when anything comes up about which they think we may have doubts or differences of opinion. We get in touch with them, or they with us, and in that way we receive the benefit of the experts of all of the Associated Bell Companies.

Q. Do you mean national?

A. Yes. I can illustrate it, perhaps, best by giving you some specific examples; there is a National Electric Guide, which consists of regulations which the National Board of Fire Underwriters,—in other words, rules showing how you should run electric wires and telephone wires in order to avoid wire hazard; the Fire Underwriters, in order to reduce the fire risks—

Mr. Duls: I want to offer this as Plaintiff's Exhibit No. 157, the same being National Electric Code, regulations of the National Board of Fire Underwriters for electric wiring and apparatus, as recommended by the National Fire Protection Association.

690 (The exhibit was thereupon received in evidence, marked: "Plaintiff's Exhibit No. 157: witness, Pennell"—and is filed herewith.)

A. Some of the things I know from my own experience which have been suggested for this code, and some of the things are extremely obnoxious and a telephone company wouldn't complain, and they add considerable expense to this wiring. The Engineering Division of the American Telegraph & Telephone Company represents us in the conferences which are had with the Fire Underwriters when new editions of this code are to be brought out, and in that way the construction is specific and is safe and sound, good engineering, and yet it is practical,—perfectly practical, and is satisfactory to the telephone interests. If they did not represent us, we would have to be represented by having a man go to New York, Chicago, or Washington,—wherever the conference is held,—and we would have to go to that expense, or else have to leave the matter in the air—without any representation, and take the chances that some rules might be established which would be injurious to us.

Q. Does the American Company make a special assessment against the Southwestern Company for the time and traveling expenses of its experts in attending these conferences and representing the Southwestern Company,—or is this service included in the payment

which you have been describing?

A. This service is entirely free; it is part of the payment.

Another example of this national engineering is what you

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might call problems relating to electrolysis. Now, as damage is caused when an electric current leaves the metallic structure, which is part of this earth, electrolysis takes place on the telephone cables. in the ducts,—takes place on gas pipes and water pipes,—and you can see that various interests are involved. Gas companies are involved, water companies, perhaps the electric light companies, and the telephone companies. Now, in order that proper engineering practices shall be followed in order to minimize this trouble, it was necessary for all of these interests to get together. It is going to cost the telephone company something to build its plant in such a way that electrolysis will be minimized and also help the trolley company and perhaps remedy it, and it ought to be done in accordance with good engineering, and safe and sound. Now, there has been a committee appointed, called the American Committee on Electrolysis. to study this process, and on the Committee are the American Electric Railway Association, American Gas Institute, American Institute of Electrical Engineers, American Railway Engineering Association, American Water Works Association, National Bureau of Standards, National Electric Light Association, The Natural Gas Association, and the Amercan Telephone & Telegraph Company, which is this Engineering Staff which represents the Southwestern Company.

Q. Have you a copy of the report of that Committee here?

A. This is it.

Mr. Duls: Offer that as Plaintiff's Exhibit No. 158, the same being entitled, "A Preliminary Report Prepared for Submission to its Principals by the American Committee on Electrolysis—1916" and ask that the stenographer mark it.

(The report was thereupon received in evidence marked: "Plaintiff's Exhibit No. 158, Witness Pennell" and is filed herewith.)

A. Another example of this National Engineering is the specifications for the crossing of wires and cables over railways. The railways of the country are insisting on standard construction where the wires cross the rights-of-way, and a conference was had between the Association of Railway Telegraph Superintendents and the wire interests, in which the American Company's Engineers represented the Southwestern Company, and as a result these specifications for the crossing of wires and cables over railways were worked out, and it provides safe construction, one which is agreeable to the telephone interests. Some railroads wanted construction which was excessively expensive and was not any more conducive to safety than more reasonable standards which were finally adopted.

Q. Have you a number of copies of those?

A. Yes, sir.

Mr. Duls: We offer this as Plaintiff's Exhibit No. 159, the same being: "A. T. & T. Co.'s Specifications No. 3636"—entitled, "Specifications for crossing of wires, of cables, of telephone, of telegraph, signal and other circuits of similar character over steam railroad rights-of-way tracks, or lines of wires of the same classes."

693 (The exhibit was thereupon received in evidence and marked: "Plaintiff's Exhibit No. 159, Witness Pennell" and is filed herewith.)

A. Still another example of this national engineering is the National Electrical Safety Code, gotten out by the Bureau of Standards of the Department of Commerce of the United States; they have been working on a National Safety Electric Code; in other words, a series of rules or codes which will be condusive to safe construction in electrical work, and the telephone interests are concerned.

Q. Is that for the protection of the employees of the Telephone

Companies?

A. It is both for the protection of the employees and for the protection of the public,-protection of human life. The telephone companies are concerned, for they want safe construction as far as it can be done economically conducive to safety. A great many conferences were held between the engineers of this Bureau of Standards, and in these conferences the Bell interests were represented by this Staff of Engineers who got in touch with us, that is, the Southwestern Telegraph and Telephone Company, wherever any question arose in which they felt that the Southwestern's interests were involved,-in other words, the standards, as now adopted, are satisfactory to all telephone interests. We have been represented by a staff of experts without expense, and probably more ably represented than if we had had our own representatives, because we have had the benefit of experts.

694 Mr. Duls: We offer this as Plaintiff's Exhibit No. 160, same being Department of Commerce's Circular of the Bureau of Standards, National Electrical Safety Code.

(The circular was thereupon received in evidence, marked: "Plaintiff's Exhibit No. 160, Witness Pennell" and is filed herewith.)

(By Mr. Duls:)

Q. Mr. Pennell: Is this circular of the Bureau of Standards, referring to safety, used here in Houston in construction work for the

Southwestern Company in this exchange?

A. Yes, sir, as far as I know, our plant is built in accordance with these rules. The rules are a little involved in some cases, and it would take an engineer to interpret them, but all of our standard hand-books are drawn up so that they conform to the rules. The telephone interests were really the pioneers of the "Safety First' movement, which has been a very popular movement of late years, and we have heard a great deal of it in late years. We have had this safety first movement for-we haven't called it safety-first, but our engineers—we have been all working on it for a long time. lawyers are very eager to point out to us whenever we have an accident how much it costs and how it could have been prevented by some other types of construction.

Q. Are there any other illustrations of national engineering problems that you want to tell us about?

A. I think not.

Q. Then the General Staff of the American Company keeps the Southwestern Company advised as to the progress on these various matters that you have just testified to?

A. Yes, they couldn't handle it any other way. They couldn't represent us in our conferences, represent us—really represent us, unless they kept in touch with us all the time; and if a problem comes up which they think might affect us peculiraly, they get in touch with us either by conference or correspondence, and they represent us thoroughly and carefully as possible for us to be represented.

Q. Does the General Staff-

A. (Interrupting.) We have the privilege, of course, of having our own representatives in all these conferences if we want to. There is nothing to prevent us doing that if we feel that it would be of any value to us, but then we are represented as well as, and probably better, than we could probably be represented ourselves, and we save the expense in having them represent us.—All I can say is that they have never told us not to—I have talked to them, and they have no objection in the world to our being represented if we wanted to.

Q. Mr. Pennell, when we adjourned yesterday afternoon you were telling us of the services rendered the Southwestern Company at conferences where engineering questions, such as the crossing telephone wires over railroad tracks, high tension wires, and other questions of that sort, were taken up and decided, and how the General Staff undertakes to protect the interests of the Southwestern Company at these conferences. These are general problems that affect

the Southwestern Company, are they?

696 A. Yes.

Q. Does the Southwestern Company ever have occasion to call upon the General Staff of the American Company for advice. on specific problems that arise in the operation of its business?

A. Yes, quite frequently,

Q. Well, can you mention some cases of these specific services

called for by the Southwestern Company?

A. Yes, sir. Of all ordinary problems we have, we can solve ourselves; occasionally there is a problem which is rather new to us, which we haven't had very much experience on, and and a problem of that sort arises, we get the assistance of this General Engineering Staff,—Research Staff,—on problems of that sort. Problems of that sort will arise when a new type of apparatus is introduced; for example, in connection with machine switching or the automatic telephone, why problems of that sort arose and we have already asked them for advice in connection with machine switching in Houston. We may have a problem which will arise in Texas for the first time,—it has occurred in the United States, perhaps, a good many times in different parts of the territory. When a problem of that sort arises, if we feel that we will be benefited by advice from this staff of engineers, we ask them for advice and get it. Now, I have

made a list of a number of problems in which we asked them for specific advice, and I have got it as an exhibit here. Q. Let's have that, Mr. Pennell.

A. A very good illustration of this class of problems, it doesn't reply to the question,-but it came up recently with 697 reference to long telephone cable where we were stringing a long telephone cable between Dallas and Fort Worth.

Mr. Duls: We offer this as Plaintiff's Exhibit No. 161, being entitled: "Partial List of Special work done on problems for the Southwestern Telephone and Telegraph Company by the General Engineering Staff of the American Telephone & Telegraph Company.

(The exhibit was thereupon received in evidence and marked; "Plaintiff's Exhibit No. 161, Witness Pennell" and is filed herewith.)

(By Mr. Duls:)

Q. Al- right, Mr. Pennell.

A. I started to say that this long cable between Dallas and Fort Worth has resulted in a type of problem in which we haven't had much experience, and in which they have had much experience; and when the problem arose, we got advice from them. This long cable line is thirty-five miles long and is the first one strung in this part of the country, yet, in the centers of population in the East these cables are quite common, and the General Staff Engineers have experience with that type of construction. When we started the engineering on that cable, we availed ourselves of their assistance. In this list I have marked first here the question,—the problem of fundamental plans. I imagine that Mr. Rhodes explained fundamental plans.

Mr. Rhodes has explained that to us and it won't be neces-698 sary to go into that. You know that the General Staff has assisted the Southwestern Company with preparing fundamental

plans.

A. Yes, sir. We do not make fundamental plans. We haven't got enough of that work in Texas, as there are only four cities in Texas sufficiently large to require the making of fundamental plans. In this fundamental plan work the American Company actually sent men to Houston and they spent three hundred and eight days here; that is, the men days were three hundred and eight. Arnold, Wallis, Plummer, Holt and Copp were the men. It is interesting to see their forecast was made of the population of Houston. In 1915 a forecast was made of the population of Houston as of 1929. That population is 245,000. In 1906 they made a forecast of the population of Houston for 1920. That forecast was 175,000. That forecast will be verified very shortly, when the census comes out,-I don't know what it will be.

Mr. Powell: It wont be very far wrong, I don't think.

A. Now, these fundamental plans are made only in the larger

cities of the country, and in this Staff of Engineers are experts who do nothing but work on the development portion of these fundamental plans,—making a forecast of populations, forecast of growths; they are apart from the local color,—they aren't prejudiced; perhaps, as a local percon would be. In our experience, we get an estimate

of local people, and it is obtained in every case before this estimate is made, and yet very often it is likely to be a little exaggerated—the population—as people are naturally interested to see their own home town large. I know that has happened

to me several times when I have made an estimate of the population of the town I was living in.

Q. Now, Mr. Pennell, in regard to buildings and general office equipment, has the General Staff rendered the Southwestern Company, specifically, any service applicable to the Houston Exchange?

A. When each of the buildings in Houston were built, plans were reviewed by the engineers of the General Staff. They have a telephone architect who spends all of his time in studying the design of telephone buildings, and we obtained his assistance and the assistance of the equipment engineers in suggestions on the plans which were prepared for the buildings, and we actually got suggestions and availed ourselves of them.

Q. What would you say with respect to the services by the General Staff in regard to sub-station equipment, specifically, as applied

to Houston?

A. They have rendered us the services I mentioned the other day—the design of the desk stands. They have rendered us, perhaps, more service in connection with the design of central office equipment. When each of the common battery switch boards which are installed in those buildings were erected, they revised—they reviewed the plans of the switchboards and helped and assisted us in the preparation of the plans.

Q. Did they give you any advice in regard to the handling of the service between the cantonment established here during

the war?

A. Yes, sir—they did a lot of work in connection with Army work. There had to be almost one channel through which that information regarding telephone service in cantonments should come from the Government to the Associated Companies. It was necessary to have a standard telephone service in all of the cantonments; they served as the department to receive this information and to confer with the Government, and the information was then passed on to us. As a result, the telephone plants in the cantonments in Texas were built in accordance with the standards decided upon by the Government in their conferences with the Telephone Company.

Q. Now, on page 5 of this Exhibit No. 161, Part III. you have listed a typical—or you have listed typical items of work done in aiding the Southwestern Company with its substation equipment, have

you?

A. Yes.

Q. Has the General Staff rendered the Southwestern Company any service with respect to its outside plant?

A. Yes,—they have rendered us a great many services; I have out-

lined them on pages six and seven and seven and a half.

Q. Does that work apply specifically to the exchange of the Southwestern Company here in Houston?

A. It applies to all parts of the outside plant exchange.

Q. In regard to the protection of life and property, you testified yesterday to some of the services that the General Staff rendered the

Southwestern Company in that regard.

A. There is a relatively new plan, or type, of specializa-701 tion of engineering called "Insurance Engineering." There is a branch of the Engineering Department known as the Insurance They have some engineers-inspectors-who make detailed inspections of the larger telephone properties in the country, with a view of making suggestions which would reduce the fire hazard. In Houston they have made inspections from time to timethey inspected the Preston Building three times-that is this building-the Hadley Building four times; the Taylor Building three times-during the period from 1916 to 1919.

They made certain suggestions as to changes which might be introduced which would reduce the Insurance hazard, and these changes have to some-to a considerable extent, been complied with.

Q. Has the Southwestern Company-I mean, has the American Telephone and Telegraph Company—the General Staff of the American Telephone Company, rendered the Southwestern Telephone and Telegraph Company any service with respect to traffic?

A. Yes, they have rendered a number of services with 702 respect to traffic. They had traffic experts visit the city of Houston a number of times. Mr. Christianson, in 1913, visited Houston, making a special study of the service observation; you understand that we observe a certain percentage of our service-of the calls, to see whether they are handled properly. We do that in order to get a line on the service we render or are giving the public.

Q. On pages ten and eleven-

A. (Interrupting.) Mr. Allen also visited Houston in 1913; Mr. R. E. Walker also visited Houston in 1917; all on these service problems.

Q. Well, Mr. Pennell, those services are not rendered at one time

and then never rendered again?—are they continuous services?

A. They are a continuous proposition. When anything comes up

that makes us feel it is desirable to obtain special service, why, we take the matter up with the General Engineering Staff and they will either send engineers here or we will have a conference or get together and get the information which we want.

Q. Now, on pages ten and eleven and twelve you have listed

services with respect to operating and traffic?

A. Yes, sir. Q. Has the General Staff rendered the Southwestern Company any service with respect to transmission?

A. Yes, they have done a good deal. Transmission has been developed, especially the last few years; it is a branch of 703 telephone engineering which is assuming greater importance

every day. Transmission is that part of the telephone engineering which relates to the transmission of the electrical currents over the wires. It is a very technical and very interesting part of the business. The General Staff has developed the technical instruments which are used in studying telephone transmission. It may be interesting to you to just mention a few of them. They have noise meters. They have standardized the units of noise, so that if a line is noisy, the question arises—how noisy, how objectionable it is and so they get the units of noise and can measure the line and see. It is simply a refinement of engineering-in other words, it measures how noisy that line is-how objectionable is the noisethey have noise meters-

Q. (Interrupting.) Would that thing apply to the transmission

here in Houston?

A. I don't suppose there is a noise meter in Houston, but we have noise meters in the general offices of the Company in Dallas, and they are undoubtedly in use in Houston; they are available for use anywhere in the State.

Q. I have reference to the distinction between long lines and

local service?

A. Oh! that's used on the local lines and long lines; even crosstalk meters; the talk, I mean, which you hear on one line which is noticed on another line; sometimes when you are talking on a tele-

phone you hear someone else talking on another line-that's 704 what we call "cross-talk, how much cross-talk there is; then, they have impedents, measuring sets, and have frequency

analyzers, so that we can analyze the over-tones in the telephone We have meggers, and all sorts of scientific instruments which were developed by this Staff of specialists who are working on that line of work which can not be obtained anywhere else. They have been placed at our disposal and are for use on exchange lines in Houston or on any exchange in the State.

Q. Now, these are examples of specific services rendered by the

General Staff to the Southwestern Company?

A. Yes, sir.

Q. Just examples?

A. Yes, sir.
Q. And not, by any means, a list of services rendered by the General Staff of the American Company to the Southwestern Company?

A. No, sir.

Q. Are the engineers of the Southwestern Company in constant

communication with the engineers of the General Staff?

A. There is constant communication between us. That's accomplished in a number of ways-perhaps the largest channel is through correspondence-letters which are gong back and forth every day; there are conferences—conferences held at quite frequent intervals; one is being held next month, in which the Traffic Engineer of the Southwestern Telegraph & Telephone Company will be present; one was held only two or three weeks ago in St. Louis, at which the representatives of this Company were present; sometimes con-

ferences are held in Texas, sometimes they are held in St.

Louis, and sometimes in New York. Another method is through visits; our engineers will visit their engineers, or their engineers will visit Houston or Dallas. To illustrate the value of this correspondence, I have gone through my files and made a list of just the titles of some of these letters, and haven't taken them all—I have just taken a few, so you can get an idea—just a picture of what the scope of it is. In other words, there is in New York a staff of expert engineers who can get the experience of all the Associated Companies and the experience of all of the other telephone companies in the world. They have that information available for use and we use it whenever we feel—whenever we feel that we need it. There is very little literature on telephone engineering. It's relatively a new art. There is engineering literature on power building, for example, and a lot of engineering works on water supply; they have been in existence for a hundred years, but there is relatively no engineering literature in existence—perhaps I put it a little strongly—there is very little which is of assistance to us in existence in book form. The art isn't old enough.

Mr. Duls: Now, we offer this as Plaintiff's Exhibit No. 162, the same being; "Partial list of letters received from the American Telephone & Telegraph Company, bearing on special services rendered to the Southwestern Telegraph & Telephone Company."

706 (The exhibit was thereupon received in evidence, marked Plaintiff's Exhibit No. 162; witness, Pennell,—and is filed herewith.)

By Mr. Duls:

Q. Mr. Pennell, I note these letters include advice and assistance on problems relating to Houston, as well as to problems relating to Texas in general. I notice that on Page 1 you have a letter, dated March 29th, 1913, regarding fundamental plans for Houston, Texas.

A. Yes, sir.

Q. Another one, dated July 9th, 1914, relating to the commercial

basis Houston development studies.

A. Yes, sir. I have just taken typical letters, quite a number relating to specific problems in Houston and quite a number of general problems which may be available to Houston, and may be needed.

Now, on Page 4, at the top of the page, a letter dated January 11th,

1915, my copy is blurred,—what is that?

A. This is moisture-proof switch board cable. The question of humidity is quite an important one in connection with the design of telephone equipment in Houston. The climate here is humid and the moisture is liable to have an injurious effect on the apparatus, and special precautions are taken to prevent that,—and there are

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quite a number of letters in the correspondence which I have had. and I think that there are some listed here on the question of moisture conditions in Houston. A special cable was designed for use in

Houston,—a moisture-proof cable. I think the first example 707 used in Houston was a specially enameled insulation placed on the wires underneath the other insulation,—in there to help against this moisture.

Q. Now, Mr. Pennel, do the engineers of the American Company do work which the engineers of the Southwestern Company could

just as well do, themselves?

A. No,-there is no duplication of the work, whatever. The local engineers do the field work in the construction, the engineering, and the engineers of this General Department do the research and development work and such specialized work as affects a few cases in any one locality.

Q. Well, why wouldn't it be more economical for the Southwest-

ern Company's engineers to do both kinds of work?

A. We can not afford to have a staff of engineers which would do the research work in the manner in which it is being done, for, if we did have a research department, it would have to be, from financial limitations, smaller, and no research department in any single company could accomplish the work which the centralized department does, which has the advantages of the entire country.

Q. You mean that the present arrangement results in less cost to the Southwestern Company than if the Southwestern Company per-

formed the work itself?

A. Yes, sir; if we attempted to perform the same services we are getting under the contract, it would cost us a good deal more than

it is costing us today.

Q. Now, Mr. Pennell, you are an engineer, and you have testified to the engineering services rendered by the General Staff of the Southwestern Company. Does the General Staff render legal services?

> A. Yes, sir, they render legal services. Q. Then render accounting service? A. Then render accounting service.

Q. Does that accounting include the auditing of the books of the Southwestern Company?

A. The American Company auditors audit the books of the South-

western Company.

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Q. Mr. Blair-Smith told us something about that, but you know it is a fact that it is done for the Southwestern Company?

 A. It is done,—yes, sir.
 Q. Does the General Staff render financial services to the Southwestern Company?

A. Yes, sir, they do,—financial services of great importance.

Q. Mr. Blair-Smith also told us about this financial service rendered the Southwestern Company by the General Staff, and so we won't go into that with you. Is this arrangement under the Licenses Contract, by which the Southwestern Company receives the use of the instruments, and all these other services, worth what the Southwestern Company pays for them, in your judgment?

A. It is.

Q. Is there any other way by which the local exchange here at Houston could get these services?

A. There is no other way that I know of.

Q. Do you know of any other body of men in existence in the world that could render that service?

A. There is no other body.

Q. And for that the Southwestern Company pays 4½% of these receipts that you have mentioned?

A. Yes, sir.

A. Yes, sir.
Q. If the Southwestern Company should sever its relation 709 under the Licensee Contract with the American Company, would it, or would it not, have to build up an organization similar to that of the General Staff?

A. To accomplish the same purposes, it would have to,—yes. Q. Well, it would either have to do that, or have to go without those services?

A. Exactly.

Q. And if it did not receive those services, what would be its ability to render the class of service that it is rendering today?

A. It would be difficult to do that. It would be reflected in the

class of service, without any doubt.

Q. Of course, and—it would cost more to build up such an organization and maintain it than it is costing the Company now, under this 41/2 % arrangement?

A. Yes, sir,—it would.

Mr. Duls: That's all, Mr. Pennell.

Cross-examination.

(Questions by Mr. Howard:)

Q. Have you any idea what year's salary is paid to any of these engineers?

A. I haven't any idea what their salaries are at all.

Q. You wouldn't undertake to tell us, Mr. Pennell, in any 710 way, what the cost is to the American Telephone & Telegraph Company of the service?

A. I haven't any idea.

Q. You have spoken of patents, and told us of one or two patents, Mr. Pennell, that are used in local exchanges, as distinguished from long distance operation. Now, tell us where the Southwestern Company, by its association with the American Telephone and Telegraph Company, is using any principle that's not open to the world?

A. The patents covering the loading coils,—the original patent

of the loading coils.

Q. You stated yesterday that loading coils-

A. (Interrupting.) No loading coils are used in the Houston Exchange. There are a number of patents covering the old coils, and the old coils are in the Houston Exchange; there are a number of patents covering repeaters,—repeaters are in the local exchange; there are a number of patents covering devices in connection with the building out of circuits which are in the Houston Exchange.

Q. Now, do you mean to say that the independent companies have no use of any article that involves the principle of a loading coil?

A. The loading coils, as they are made today, and as they are protected by patents today, are available, practically, to the Bell System, and not to others.

Q. The Independent Companies have loading coils, also?

A. No, sir, not to my knowledge. I don't think any inde-711 pendent company which has a loading coil—there are none made, except the Western Electric, and they are licensed only to be used by Bell Associated Companies. That is my understanding.

Q. How long have they been in use?

A. Oh, I guess the first coils have been in use—perhaps seventeen or eighteen years.

Q. And that's an old patent, is it?

A. The original patent has expired,—expired a year or two ago,—but a lot of patents have been brought out covering improvements, and so I don't imagine that any one would attempt to manufacture a coil under the original patent.

Q. Give us an example of a recent material patent that involved a

principle that's not open to independent companies.

A. I don't think the duplex cables are used by anyone except the Bell System, to the best of my knowledge,—they are new.

Q. Are they patented?

A. I think the process is patented, that is, the cable, which is arranged by twisting the wires you can get a phantom circuit. There is a cable of that sort in Houston.

Q. How much of it, and how much is in use?

A. It has been here for four or five years, I think. I don't know, and would have to look in the appraisal.

Q. What's the particular benefit of it?

A. It enables you to operate a pahntom circuit over two physical circuits through the cable.

Q. That's just as clear as mud to me, Mr. Pennell. I want

to see where it is an economy.

A. Most of the patents which are in use in the Exchange in Houston, here, are patents owned by the American Company, and the Western Electric Company sells the product to the trade.

Q. Take the main part of the telephone industry and the equipment that is necessary to operate a telephone in a practical way, and an independent company could get along very well, so far as delivering the goods is concerned, couldn't they?

A. Well, I don't know exactly what you mean.

Q. I mean that they could take a receiver off of a hook and ask central for a number and get the party that they want to talk to-

get it as promptly as you can over a Bell phone?

A. The Independent Companies give telephone service, of course, but they don't give, however, the complete telephone service the comparative telephone service that they give. You couldn't group to

gether the independent telephone companies in this country and give a service from coast to coast, or to another place; it is impossible to do it, and there is no independent telephone company that I know of today that could give telephone service in New York-

Q. We are concerned with Houston, and I am trying to find out what benefits we get. We have a comparatively small exchange here, and we are not interested in your service which enables you to talk to San Francisco from New York, or the benefit of any other large city like New York,—they are not present

here, but we are trying to find out what these people have done that have saved the people the amount in money, or that tends to make the service cheaper. Now, in that connection, Mr. Pennell, since the days when you cut out the old magneto battery and stopped ringing the bell, and put the receiver on a hook, what improvements in a practical way have there been that have been of benefit to a subscriber, that have been provided by this Staff or by anybody else?

A. Why, I outlined a lots yesterday.

Q. . am talking about in a practical way. A. Fifteen years ago? My answer-

Q. (Interrupting.) That was about the time you changed these batteries?

A. Yes.

Q. Fifteen years ago a subscriber took down that receiver off of a hook, asked central for a number, central responded, the sub-scriber got in connection with the party he wanted to talk to, held his conversation, put the receiver back on the hook, and would go about his business?

A. Yes.
Q. He held a satisfactory conversation—could do it in the same length of time that he does it now,—did it with no more danger of getting a ring-in or getting crossed with somebody else's line, and with no more tax upon his patience and his good nature than

he does today? In other words, that's the same service fifteen years ago that he gets today, so far as he is concerned, did he not?

A. What's your question?

Q. I say, fifteen years ago he got his service—just as good service, and in just the same time as he gets it today?

A. You mean in Houston, here? Q. In Houston.

- A. I couldn't tell you. I don't know how the service compared; it may have been better and may have been worse; I don't know. There was telephone service,—there was battery telephone service
- Q. Well, in Houston, or anywhere else, didn't a subscriber fifteen years ago get just as good service as he is getting today? A. Well, he got telephone service, but I don't know how it com-

pared fifteen years ago, with the service he gets today.

Q. There has been no radical change, so far as the local exchange is concerned,-no radical improvements, anyhow?

A. There has been a very radical improvement in the cost of giving that service.

Q. So far as the service is concerned, he hasn't received any special improvements rendered him? Just the same service, just as effi-

cient service fifteen years ago as it is now?

715 A. I didn't say that. I think if you will examine the records you will find that the telephone service fifteen years ago wasn't as good as it is now, perhaps, and even discounting the effects of the War; and besides, I think you will find, in fact, I know the telephone service has improved. It is better, and I think that I am correct in saying that the telephone service in Houston, even today-before we have entirely recovered from the effects of the War, is better than it was fifteen years ago, because we have got improved methods. I will tell you why, Mr. Howard; I have got records of certain cities,-I haven't got them of Houston,-which shows a comparison of the telephone service, and it has improved in the last five or six or seven years, and I know, taken as a whole, that the telephone service here-

Q. (Interrupting.) Let's see from the subscribers' standpoint how it has improved. Does he get his central connection any

quicker?

- A. Yes, sir, in all ways; there are fewer errors, quicker connections, fewer cut-offs, and things of that sort; and I am discounting the service here. In some cities, and it is the same here, which is affected by the War, and we haven't recovered from it, and I think it is only fair to do so, but in my opinion, in Houston, I think the service is better today than it was fifteen years ago, because we know how to handle it better.
- Q. The repeater, I believe you said, is used almost exclusively on long distance service?

A. It is used to improve the transmission when the ex-

change lines are connected to long distance lines.

Q. Now, Mr. Pennell, this Staff is working out a great many new ideas, some of which are patented, and some of which are not?

 A. Yes.
 Q. You undertake, then, to apply them in a practical way to the art. do you?

A. Yes.

Q. And do they all succeed?

A. I don't know of any idea which they have put out that has not succeeded, for this reason: That before it goes out to the field as a practical device, it has been tried—as they work up something they try it, they put it in experiment and watch it.

Q. But it is a very common thing for things to pass the experimental stage—some to pass the tests,—the instruments, when put into practical use, do not do what is hoped for, -isn't that true?

A. It may be that that happens, but I do not know of any such case in my experience in the telephone business.

Q. And, of course, in such an experience as this the cost of it would be charged up to profit and loss?

A. I don't know of any case like that—I don't think it has hap-

pened.

Q. You have got a group of scientists up there that are experimenting upon the properties of these different companies all over the United States?

A. No, sir-they aren't experimenting on properties.

Q. They put in every new notion that they conceive and go out and try the work out in the field, don't they?

A. They get a device which they think is an improvement. 717 which is an improvement, and they take it up with the engineers in the field,—the operating people in the field,—and get their opinion; and if it appears practical, appears to be a good device, an experimental installation is made. It is made as an experimental installation after first being given a laboratory test. I told you about the lead sheath of the cables. They were experimenting to make a cheaper lead sheath for the cable; tin had gone up in price,-the question was,-couldn't you get a sheath which would be just as good and cost less? They then made experiments and turned out an alloy and found alloy,-that the alloy, with laboratory tests, gave as good results as the lead and tin. They then made some sample lengths of cable and they took the matter up with one of the Associated Companies and had this sample cable pulled in,—had it observed and pulled out,—and it was finally deminstrated beyond any doubt that it was al-right. Now until a thing has gone through a process like that is it ever put out into the field to be used in the plants. There is no experimenting with operating plants,—anything like that, of course, would be fatal.

Q. Now, you referred to copper wire as a great achievement of this

Staff. Copper wire is not an invention of that Staff?

A. I said "hard-drawn copper wire."

Q. Well, even hard-drawn copper wife-is there anything new about that? 718

A. There isn't now.

Q. Hard-drawn copper wire has been in use a long time?

A. It has surely been in use ever since this General Staff devised it. I guess it was about thirty years ago. Now, I mention that as an interesting thing; it has been so long ago that most of us have forgotten about it.

Q. Didn't the Ancients have methods of hardening copper?

A. I think they did, but it was a lost art. Some of the old Roman Aqueducts have cement in them which is as strong today as it ever was: they knew how to make the cement-and that art was lost until early in the eighteenth century,—the nineteenth century, when it was discovered again. Now there was a process, apparently, for hardening copper which the Ancients had, but it was a lost art. There is no process now of tempering copper that I know of,—this hard-drawn process is a different process.

Q. The independent companies have access to this hard-drawn

copper wire, haven't they?

A. Yes, they have access to it. A great many of these inventions are of a nature that they are not patentable. They may have a special design, but this is true.—we have the benefit of this Staff for development purposes; this is the idea, -it is of service to us, and if others can't use it, why that doesn't lessen its value to us. ter of fact, many of them didn't use it because they didn't know about it until years afterwards. Some of the devices which are not used now by the independent companies,-I might mention the Automatic

Company here, which wasn't built so many years ago, and 719 practically all of the sheaths in their cables were pure lead and they didn't last. At the time we were using the lead and tin, and I don't think that composition was patented—don't believe it was a patented process—and yet the information was known to us through this Staff of Engineers and we were using that improved process, and they weren't using it because it wasn't known to them.

Q. This contract with the American Telephone & Telegraph Company is not made in a sense of feeling or gratitude, is it, for things

they did in the long-ago?

A. Not that I know of. Q. It is supposed to be a business contract for services that are peculiar to them, which they will render to these different companies?

A. Yes, sir—certainly.

Q. And even they may have discovered and revised the methods of the Ancients and devised a method of hardening copper wire, and that is open to everybody who wants to use it but now, coming to the year 1920, there is no service on account of that copper wire, because you don't get any particular benefit from the copper wire that any other company could not get?

A. I did not attmept to value the service. The invention of harddrawn copper wire—that was an invention long years ago-however, it was the invention of this Staff, and hadn't they invented it,

720 the telephone industry would not have had the value of harddrawn copper wire for the period of the time that it has had it. May be someone else would have invented it, but it would not have been invented so soon.

Q. Did you ever hear of any invention that didn't have a good

many claimants to being the author of that invention?

A. A great many do have alcimants.

board,—they invented that?

A. Yes. Q. They also, did they, invented this common battery switch-

Q. How long has the common battery system been available to other companies,-independent companies,-do they pay any royal-

ties or privilege for using the commony battery system?

A. They can't use the circuits which the Bell Companies use but they use the common battery. I don't think their common battery system is as efficient or as good a system as ours; they won't talk as well. You see, I am a biased witness; I have tested all common battery systems as an engineer, and in my opinion, from a technical point of view, the circuits in the common battery system we use are better.

Q. Those engineers of a manufacturer, and other independent

companies

A. (Interrupting.) They are devised by their shop engineers and are the only circuits that are open to them, because the Bell System of circuits are covered by patents that they can't use at

721 Q. Don't they claim that what they get is just as good,they work largely upon the same principle, do they not,-

all common batteries?

A. Well, it depends upon what you mean by "same principle."

The same trade principle?

Q. You have little methods and details which you say are of peculiar advantage, which other manufacturers will discredit and they will exaggerate the advantages and claims for their own production,-that's true, isn't it?

A. Well, our system is radically different from their system.

Q. They claim theirs is the best and you claim yours is the best? Now this insulated wire you spoke about, where you wrap the wire up in a little paper coil,—is that something that is not

open to use by other companies?

A. The dry-core insulated wire, if there were patents on it, have expired and anyone can manufacture it who has the facilities, but this is true,—that the modern telephone cables, the larger sized, can be made only by the Western Electric Company, because they are the only ones who know how to make them.

Q. Is there any different principle between the larger ones and

the other ones?

A. Yes, sir,—there is a different grade of paper used and a different process of laying up the wires, and I think I am correct in saying that you can't go on the market today and get 1,200-pair cable wire anywhere except from the Western Electric Company.

722 Q. But there is nothing to prevent other companies from manufacturing the 1,200-pair wire cable if they wish to?

A. Well, they don't know how to do so.

Q. Well, they can take one of yours and examine it, and most any skilled man can take a thing and see how it is put together and get a pretty good idea as to how to make it?

A. All I can say is-I don't think you can obtain from any manu-

facturer today 1,200-pair cable which would be satisfactory.

Q. Are they being used very generally today,-1,200-pair cables? A. They are coming into use quite rapidly. They are in use, I might say, fairly generally.

Q. When was it first manufactured?

A. I couldn't tell you. Q. Quite recently?

A. Three or four years ago, probably; perhaps longer than that.
Q. And you say they don't know how, and yet the whole pro-When they get one of these cables they cess is open to the eves? can see how it is manufactured and duplicate it, can't they?

A. They can see the cable; yes, I suppose they could if they wanted to do it,—they could probably manufacture them; but as a matter of fact I don't think they do, because I know of firms who have made inquiries from them for cables of that sort and have been told that they could not get them.

Q. Any independent company could buy them from the Western

Electric Coompany?

A. Yes, sir, they can,-if they know how to use them, and 723 know how to order them.-but most of them don't know about them and don't avail themselves of them.

Q. Now, you spoke-

There are many of these improvements, Mr. A. (Interrupting.) Howard, which, after they are made, are perhaps not patentable, and they are open to the world if the world wants to use them; but that doesn't lessen the value to us. We want to get the advantages, and we set our engineers to work and they discover an idea and give it to us,-and if others use it, it is all right, it does not lessen its value to As a matter of fact, we know about it in advance, and in most cases the independent and other companies con't use these improvements until years afterwards, because they don't know about it.

Q. But each year you are paying a price for those things that are open to the world, where you get no particular benefit from it if anybody can go ahead and use the products?

A. Well, if we can get cable at a one-third less price, for example, than we used to pay for it, it's an advantage to us; and if, after we have used that cable five or six years, it then becomes generally known that it is a good thing, and that leads others to try to get it,that doesn't lessen its value to us.

Q. You go right on paying for it each year, out of gratitude for

what they have done?

A. No, they are continually at work and ideas are being developed. We are just on the eve of another big cable which

is coming, and which we are going to get at the end of this year, and which is going to make a big reduction in the cost of cable, and I don't think that process is patentable, and others can get it, but they won't know about it. There is no particular secrecy about it and it is not being shut up in a book; but then, we are not advertising it. And we are getting the advantage of that improvement and are paying for the work necessary in order to make that improvement,-but that doesn't lessen the advantage to us because it doesn't happen to be patentable.

Q. Well, it is pretty good business to kinda' hold back and let the

others do the developing?

A. No, I think not.

Q. How about this alley? Is there anything about the alloy that

you are protected in?

A. No. I don't think that it is patentable, and they can but the cable if they want to buy it. As a matter of fact, it is true that most of the independent companies have been using pure lead sheath cable recently, and I guess they still are. In fact, they don't know about this.

Q. The matter of allows of material is not a matter of new ideas? A. Any man who studies the question of alloys, of course, knows

the different results that can be obtained in alloys.

Q. That has been going on for years?

A. Yes, sir,-certainly, the question of alloys has been 725 studied for years.

Q. Now, you mentioned these beetles; who discovered the beetles?

A. I don't know.

Q. Did the American Tel. & Tel. Company discover it?

A. I don't suppose they did.

Q. That was done by the men out in the field, who came in con-

tact with and had trouble with the cable, wasn't it?

A. I don't know whether they discovered it or not. It was rather interesting. We had those troubles occurring down here and the cable men didn't know what caused the holes, and there was, perhaps, quite a spirited controversy between them regarding what was

causing the holes, and they finally got the beetle idea.

Q. Now, after you discovered that this beetle was drilling the holes in your lead cable, don't you know that around nearly every university and around the Government's experimental stations there are quite a number of intense gentlemen, with tortise shell spectacles and long hair, that will just turn somersaults to get that beetle bug, and that it would afford them an interesting study in entomology,—lots of men that would just take that thing up as the average avaricious man would take up a gold nugget in a mountain?

A. I have no doubt but that there are a great many people who

would be interested in these bugs.

Q. And that it will mean more to him than money, many of these men around universities and around the experimental stations of the United States Government? Now, don't you know that they would get as busy as they can get, trying to

find out all about that bug?

A. I have no doubt but that they would be very much interested in the bug, but I don't think anyone who is in a position to conduct and direct a study on the relation of that bug to telephone cables, and how you could prevent the bug eating the telephone cables, is as

competent and qualified to do so as telephone men.

Q. Is there anything about a cable, and the bugs eating it,—is there any man who is more and who is better qualified to find out about this than some of these intense professors, who don't care anything about money and don't care anything much about it so long as they have something like that to fool with?

A. I have no doubt but that there are many professors in col-

leges

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Q. (Interrupting.) And who wouldn't hardly sleep until they found out all about it?

A. I have no doubt but that there are a great many men that

would like to study that bug.

Q. Now, having found out about this bug, and having determined that it is due to a certain method by which the cable is hung, and having arrived at a certain conclusion in regard to a given fact,—that he must have a foothold to put his drill in,—you are going to experiment now on some method of hanging the cable, are you?—or are you going to have the American Tel. & Tel. Company tell you how to hang the cable so that the bugs can't get on the cable?

A. They are going to carry the study a little further and see whether or not an economical method can be found by which the trouble can be avoided. It appears, it may be that

the result of their study will be that they can find a method of hanging cables wh-reby the bugs can't get a foot-hold, but that the method will be so expensive that it won't be worth while.

Q. Why do they keep fooling with the cable if it don't prevent the

bug from drilling the cable?

A. They will conduct their study far enough to feel reasonably sure that they have the answer as to whether anything can be done

or not, or if it is worth while.

Q. It was a rather fortunate thing for your Company that you discovered this bug in order to show something specific that they had been working on in regard to the cable in use in Houston?

A. I thought it was very interesting.

Q. But that is really the only specific thing you have pointed out. that I can see, that they have been working on in this community,are these bugs working on the lead cable?

A. Why, I mentioned a lot of other things.

Q. You mentioned a lot of general things that apply generally? A. No,—I mentioned a lot og things that apply specifically to Houston, more specifically to Houston than the bugs. Galveston, Beaumont, Brownsville and all along the Coast and these other things were in Houston.

Q. Now, you have undertaken to figure out for us, in a way, the benefits that we get from this service and you have put in here—"Improvements of Cables by use of Fine Wire"; When 728 was that done? You have charged us \$104,000.00 for that

item.

A. We have been availing ourselves of that improvement right along, ever since we began using the cable. I don't remember the exact date we began to use the cable, but it was something like 1904 or 1905 before we had it to any extent in the plant, and we didn't have very much then.

Q. And everybody then has—everybody since then has been able

to buy this fine-waire cable, have they not?

A. If they know how to use it and where to use it, they could have. As a matter of fact, most of the independent companies during this period have not been using it. I have examined a good many independent plants, and in very few that I have known of have I found any considerable quantity of this cable.

Q. They may have concluded that it doesn't do the work you claim for it?

A. No, they didn't know about it.

Q. What is there about fine wire that an ordinary intelligent engineer wouldn't find out,-wouldn't know? What is the principle involved that brings about this saving?

A. Well, there is less copper used and you are enabled to use a

larger number of wires inside of the same sheath.

Q. Well, to a laymen, much less an engineer, isn't it evident that the thinner you make a wire, the less copper you will use? 729 And the thinner you make a wire, the more you can bind up in a sheath of a certain size?

A. Yes, if you can make it and make it so that you can talk over

it and know that you are making it so you can talk over it.

Q. What particular mystery is there, then, about making it to an

average intelligent mechanic?

A. The entire design of the cable is a very intricate engineering composition,—every detail of design,—a special grade of paper has to be used, and for a long time it was impossible to get it in this country.

Q. Well, they can examine it and tell the kind of paper?

A. They can see it but don't know where they make it or where to get it,—and then, you have got to twist the wires in a certain way. The whole question of cable design is extremely involved and a complicated one.

Q. Independent companies can buy all they want to from the

Western Electric Company?

A. They can buy it, and probably do. I have examined however, a good many independent plants, and in all of them the use of this cable was very limited and many didn't have it at all, and the only conclusion I could draw was that they did not know about it.

Q. You are setting up here—"Improvement in Cables by use of Fine Wire,"—which was invented about fifteen years ago, and that's been on the market subject to purchase by anybody that wants to

buy it, and you set it up here as a saving of \$104,000.00, and in No. 2, you set up,—"Duct Saving, due to Improvement in Cables.—\$17,300."?

A. Yes, sir.

Q. In what particular period,—how was that saving brought about?

A. Well, we have fewer cables because we have larger cables, and that means that we have fewer ducts and we save in ducts.

Q. Those simple ducts are subject to manufacture by anybody who wants to manufacture them, and are subject to purchase by any independent companies who want to purchase them?

A. Yes, sir.

Q. New alloy for cable sheaths,—I think you said the same thing applies to that?

A. Yes, sir.

Q. Now, No. 4,—"Improvement in Switch Board Coils,"—when

was that improvement made?

A. Oh, alloy for cable sheaths, four or five years ago and switch board cords,—these new switch board cords are about four years old,—I don't know the exact date, but relatively recent.

Q. Well, that one you had here yesterdau, you stated was more, what did you call it,—it would twist more, or was more flexible?

A. Yes, sir, the life of the material in it is greater because it won't break.

Q. Is that protected by any patent?

A. I imagine it is. I can't swear to it, but I think there is a patent on the switch board cords,—I think the Western Electric Company has a patent on it.

Q. And they are subject to purchase by anybody?

A. Yes, sir, the Western Electric Company will sell them, the

point I am making is this,—that these inventions were not available to anyone until these engineers devised the methods.

Q. But now they are available to everybody?

A. Available to everybody who knows how to use them and how to avail themselves of them; but it is true that they aren't used universally, or to any large extent in the plants I have inspected.

Mr. Duls: This has got on it: "Western Electric Company Cord 47,—Cord patented November 2nd, 1914, December 14th, 1914."

A. Yes, I thought it was patented, and that agrees about with my idea.

(By Mr. Howard:)

Q. What principle is there about that that is subject to patent?

A. I don't know what. The patent may cover one, ten or fifteen features in it; it may cover the manufacture of the tinsel, may cover that wrapping, and probably does cover everything that it could cover.

732 Q. There are other cords similar to it, and it is just a question of choice as to which is regarded as the best by the man

that's testing it or using it?

A. You can get switch board cords from many manufacturers, but I don't think that you could get any that has the life of the Western Electric cord.

Q. Mr. Pennell, while you are standardizing things a great deal, and working all the time,—making all of these inventions and improving the art,—how do you account for the fact that your operating expenses, and particularly your traffic expenses, are still terrific?

A. They would have been a good deal higher if we had not kept them down by reason of the improvements in the art,—the reason that expenses are high, Mr. Howard, is because we have to pay

more for labor.

Q. Yes, you have to pay more for labor, it is true,—but even before the high price of labor, and when things were normal, your traffic expenses or operating expenses at all times seemed to be very high, and you haven't, in all of this, apparently brought about anything that made any radical change in the expense of this service.

A. Well, I made some studies of Houston some time ago, and I think it showed,—I haven't got them here and I don't know the details of the figures—that the cost per traffic unit and giving service had decreased rather consistently in Houston until the war came on, and everything went up. The prices of labor have increased

733 several hundred per cent, and that's a bit outstanding feature.

Q. I am speaking of prior to the war—the Company

claims they were showing no earnings.

A. Well, they were using economy,—and the rates were not high

enough.

Q. Well, in some way you had been operating under a voluntary rate and you never sought any change of rate until up—until two or three years ago—

Mr. D. A. Frank: What difference would that make?

Mr. Howard: That, after all, is what we are trying to get at-is

what this service-

Mr. D. A. Frank (interrupting): Suppose we had been trying—had been giving free service—service free of charge for the last twenty years, what difference would that make in this rate case?

(By Mr. Howard:)

Q. Now, you have claimed all these benefits of all this research work, and you would have us believe that you have got a Staff up there working day and night for the good of the concern, trying to reduce expenses, and I asked him why it is, with all of that work and all of that research, why they didn't reduce traffic and operating

expenses.

A. I think if you will—if I could have the records here—
my recollection is that traffic expenses have been reduced for
the units of work until the big rates—the big rise in prices, on account of the war conditions, and I do know that the plant costs have
been decreased very materially on account of these improvements.
We have difficulty now, as the prices of all labor and material have
gone out of sight and it is impossible to make any improvements in
the art, and I think you will find any increase in telephone rates,
which we are asking,—you will find the general increases in telephone rates throughtout the country have not been anything like
the increase in the cost of living throughout the country.

Q. You claim that prior to the war and the advant of these high prices that your operating expenses and particularly your traffic ex-

penses per station, had been reduced?

A. I said per unit of work. The calling rate per station may vary so you can't tell anything about the traffic expense per station.

A. Yes,—that's my understanding from a study I made some

time ago.

Q. Mr. Pennell, turn for a minute to this instrument service—these induction coils, receivers and transmitters. You never made any study as to what it costs to manufacture these articles?

A. No, sir, I don't know what it costs to manufacture them.

Q. They are a standard article,—are they not? What I mean by that, is being manufactured by machinery in great quantities?

A. They are.

Q. Now, I wish you would point out, Mr. Pennell, some definite specific service that was rendered by the American Telephone and Telegraph Company during the years 1919 and 1918, for the Houston Exchange, aside from the use of their instruments.

A. The services, in relation to the saving due to these fine-wire cables and cable sheaths and switch board cords are conditions, in a sense, that we are using materials that are made under these devices right along in our plant and we are getting the benefits of this service in our plant whenever we buy the cable.

Q. Well, you are buying unprotected articles, are you?

A. It doesn't make any difference; we develop them and spent the money for the developments,—spent the money for developing

them, and are paying for them.

Q. They are not selling you any license rights. I am talking to you about something that is peculiar to Houston, that if you were operating under license rights or patent rights, and in consideration of this great sum that they paid, that they were getting their license or patent charges, why, I could see where they were getting something for it, but in an article that's unprotected and open to the world, I don't see that. Now, I am speaking of some specific service,—something that the engineers did for this plant in 1918 and 1919—some specific engineering work.

736 A. This is specific,—if you wish me to give you some

specific service, I will do so.

Q. We differ as to the meaning of "specific", Mr. Pennell.

Mr. Duls: He has got an exhibit on it and you will find it among the list of work done in 1918 and 1919 by the General Staff.

A. They gave us advice in 1919. Do you want advice—do you want in 1919, too?

(By Mr. Howard:)

Q. 1918 and 1919.

A. They have given us advice in 1919 as to how we would install

automatic telephones in Houston.

Q. Did you install any? Why did you want that kind of advice? A. Well, we have to prepare ahead in planning our equipment; we have to make our plans now for several years ahead in making extensions to our manual boards and have to know what is coming in the way of automatics.

Q. What engineer was here and looked the thing over, and how

long was he here?

A. That advice was obtained, to a large extent, by trips to New York, and interviews which I have had, and other engineers in New York on the subject.

Q. Al-right. Now, what else?

Mr. Duls: What exhibit are you now looking at, Mr. Pennell? The exhibit I refer to is No. 162, also No. 161.

737 A. Well, take Exhibit No. 162.

(By Mr. Howard:)

Q. Before this great automatic—the automatic is really now in practical use in a great many places in the United States, isn't it?

A. It's in use. It isn't in use exclusively in any cities which you

might call cities of the first magnitude.

Q. The manufacturers are pretty familiar with that particular branch and have their engineers and designers and everything that's necessary in that regard, haven't they?

A. Well, in my opinion, the introduction of the automatic switchboard, especially as it relates to its introduction in exchanges like this exchange in Houston, has just emerged from what I would call

its lowest development stage.

Q. And the manufacturers of these automatic switch boards-of this automatic equipment,-know pretty well, don't they, how to make switch boards and how to install them?

A. All the problems haven't been worked out in installing the boards in towns like Houston,-that is, relating to the inter-connection with the manual boards in towns or cities like Houston.

Q. When you get ready to install a board here, the manufacturers will install the apparatus, will they not? They know how to install it?

A. Well, I don't know who will install it.

Q. Well, the manufacturers of switchboards install them, do they not?

A. Not always, no, sir.

Q. Well, that's their practice? A. To some extent.

738

Q. To a very great extent isn't it?

A. Well hardly. A great many boards are installed by the telephone companies themselves.

Q. Al- right. Besides the automatics, what is the next thing? A. They did a lot of work for us in connection with the telephone service at the cantonment.

Q. What service did they do for you? That was not a very complicated thing, to run a line out to tone of these cantonments?

A. Well, there were a lot of special services required, a special fire alarm service required in cantonments—the cantonments were built largely of wooden buildings and the army relied upon-to a large extent, upon the telephone for fire alarm, I mean rather, for a fire alarm system.

Q. You have standard books by the underwriters that prescribe

rules pretty much for those things?

A. No, I don't think the instructions cover advice of that sort—

that's what we call "Special Advice."

Q. What is there so mysterious or complicated about running a telephone line from Houston out to the cantonment here?

A. Camp Logan?

Q. Well, say Ellington Field.

A. Well, take Logan for example. You have a long telephone cable or line that has to be loaded.

Q. Well, take a man like yourself, wouldn't you know how to run a line of cable out to Camp Logan and to install the service? 739 A. I have had considerable telephone experience, but on a

loading problem, I would want to get some expert advice. loading problem is a technical problem which I would want advice May be you think I am not a competent engineer because I would want to get that advice-

Q. What I mean is that those things are expensive and cost money and while every man likes to consult with others, he never reaches the point where he knows it all. I am just asking you as such an 740

engineer as you are, if there is anything staggering or appalling to run a telephone line out to Camp Logan and install a distributing

system around there in those wooden buildings?

A. The cable to Camp Logan is a long cable and requires loading. probably means loading on which matter of fact we get the advice of the engineering Staff; and then, there is the problem of how does the Government want this all done, and they took the matter up through their Signal Corps; they wanted to take it up with some central body, they took it up with our engineering Staff—this Staff I am talking about in New York and they did that work for us as to the general arrangement and passed it on to us. They did that work for us.

Q. That was in what year?

A. I believe in 19-7 or 1918—1918, I guess.

Q. You leave after deducting the instrument service something like fourteen or fifteen thousand dollars, and now, you have got those two instances of specific service-

A. (Interrupting.) I can give you a lot more.

Q. Give them to us, then.

A. We have the plans under way for a branch office in Houston in the Harrisburg District and that matter was taken up with the General Staff, and questions concerning the building and location of the office discussed with them.

Q. Why discuss it with them? What is there about a problem like that that requires the bringing in another force of engineers?

A. It is a condition that has to do with the fundamental development of the telephone system, and I felt it was desirable to get their expert advice.

Q. They came down and looked it over?

- A. I don't know. It may have been handled by correspondence— I think it was.
- Q. They wrote you a letter or two and told you how to do it? Well, what else?

A. Didn't tell me how to do it, but gave me their advice.

Q. You wanted to know how to do it, didn't you, Mr. Pennell? A. During those years there have been some visits by the telephone men to Houston. Mr. Walker—
Q. (Interrupting.) When did he come here—what did he do

while here and how long did he stay?

A. Mr. Walker was here in 1918. I have forgotten how long he I think he was here two or three days.

Mr. Duls: That's on Page 10 of your Exhibit No. 161, Mr. 741 Pennell.

A. Yes, Mr. Walker was here in 1916,—the fall of 1917, he was here for several days.

Q. That's the last time any of them paid us a visit?

A. No, Mr. Christian was here looking over service conditions.

Q. Is he going to testify?

A. No, sir, he is not going to testify.

Redirect examination.

(Questions by Mr. Duls:)

- Q. Mr. Pennell, that General Staff is always engaged in research and development continuously?
 - A. Yes.

Q. Now, it has made inventions in the past and has given them to the Southwestern Company?

A. Yes.

Q. Suppose the General Staff makes further inventions, will they

also be received by the Southwestern Company?

A. They will be received in the same way. I have kept in pretty close touch with the Engineers, and they have more coming in the next few years than I have ever known of before, and apparantly they have reached the point in the development where it is going pretty rapidly.

Q. All these things that Mr. Howard has asked you about, that he says have been in the past and that you are not receiving the bene-

fit of today, were inventions in what period of time, just ap-

742 proximately?

A. Well, all these things I evaluated have been within the last fifteen years, many of them in the last four or five years, and the savings from them are continuous; as long as we put that material in our plant the savings continues.

Q. The point I wish to bring out is that you are paying for services rendered by the General Staff, the benefits of which you have

received and of which you expect to receive the benefits?

A. Exactly.

Q. Now, this copper wire service, this hard-drawn copper wire, is only one example of this service?

A. Yes, I mentioned that as historical for the interest connected

with it.

Q. Can you put a money value on all these services rendered for the General Staff, for example, hard-drawn copper wire, and say by any possible way that it would be worth \$165,347.07 to the Southwestern Company?

A. I haven't tried, and you could not very well do so; one of these things is of great value, but it is difficult to make an estimate of what it is worth, not that it isn't of great value, but you have no

basis of estimating it.

Q. Besides having the use of that hard-drawn copper wire cable, the Southwestern Company has used the other appliances that go along with it, has it or not?

A. Yes, it has cable terminals, cable rings and a lot of other

devices.

Q. In your judgment, it is or not, the reason why the independent people do not use that, as you have testified, due to the fact that they do not have the use of all those other appliances that go along with the use of that fine wire cable?

A. I think that's probably one reason why the use of the fine wire

cable and of the accessories isn't so general in the independent companies as in the Bell Companies, is because they don't have—they do not have our specifications and our general engineering information regarding these developments—they don't know about them, in other words.

Q. Now, Mr. Howard asked you whether or not you couldn't buy this fine wire cable and cable sheaths and switchboards, and other things of that sort from independent people, or whether you couldn't buy them in the open market. Now, assuming that you could do that, could you buy them as cheaply as you are now buying them from the Western Electric Company?

A. No, they would cost you more if you bought them in the open market than if you bought from the Western Electric Company.

Q. You didn't hear Mr. Cox testify as to the prices charged the Southwestern Company, and the prices charged the independent companies for the same kind of telephone apparatus?

A. I think I heard that—at least, I heard part of it. mony merely confirmed what I knew as true from my experience

in the business.

Q. Now, the Western Electric Company manufacture a great deal of this material, particularly switch boards. Do they manufacture

them on the specifications prepared by the General Staff? 744 And the General Staff is giving its services to the Associated Companies?

Q. Did you testify or did you not, that the General Staff was working on the problem of making the automatic telephone practical

for an exchange the size of Houston?

A. Yes, they are working on that problem. One of the biggest parts of the problem is the question of connecting the manual and automatic boards together so you can give satisfactory interchange of service.

Q. Mr. Howard asked you whether the research carried on by the General Staff was economical research. If the American Company did not carry on that development and research work the Southwestern Company would have to carry it on?

A. Or else not have the advantage of the results of it.

Q. And you testified that, in your judgment, that is the Southwestern Company did carry on that work it would cost them more than it is costing now?

A. Yes.

Q. Just to enlighten Mr. Howard, over here, this duplex cable that is an arrangement out of which you can get the so-called phantom circuits, and as I understand it, you have two metallic circuits and over which ordinarily two telephone conversations could be carried on, but by this device you obtain from those two circuits another circuit?

A. Yes. Q. Without stringing additional wire?

A. Yes, sir.

Q. If you get an additional telephone circuit in that manner is it an economy, or not an economy?

A. It is an economy.

Q. What is the purpose of the General Staff in carrying on its experiments with reference to the cable bug?

A. Trying to devise some method of eliminating the trouble.

Q. So that the service can be improved?

A. Yes

Q. And not be interfered with by this bug?

A Yes

Q. So that the service will not be interrupted by the bug?

A. Yes.

Recross-examination.

(Questions by Mr. Howard:)

Q. Mr. Pennell, do you know how much the American Tel. & Tel. Company receives in the aggregate from this 4½% payment?

A. I haven't any idea.

746 Mr. Benjamin T. McBurney, a witness for the plaintiff, after being duly sworn, testified as follows, to wit:

Direct examination:

My name is Benjamin T. McBurney. I was born in Alexandria, Virginia. I am in the telephone business, and have been engaged in that business since 1910. I am now Vice-President and Assistant General Manager of the Cincinnati Suburban Bell Telephone Company. My training in the telephone business has been as an accountant primarily, and my present position is that of Vice-President and Assistant General Manager of the Cincinnati Suburban Bell Telephone Company. The headquarters of the Company are at Cincinnati, Ohio, and it operates in Cincinnati, Norwood and Hamilton, Ohio, and in Covington and Newport, Kentucky, and the vicinity; and, roughly, I should say it covers about a radius of fifty miles of Cincinnati. I live in Covington, which is near Cincinnati.

Our company is an associated Bell Company; the amount of our capital stock is \$10,095,300.00 and we have no bonds outstanding. The control of the stock rests with local stock-holders; probably Mr. Kilgore and his associates control it. The American Telephone & Telegraph Company has a minority interest in the company, amounting to approximately 30%, and I should say that practically all the balance of the stock nearly 70% is owned locally. The American Telephone and Telegraph Company at no time has ever held more than 30% of our stock. It has held 30% ever since the

inception of the company; practically at the time that we entered into this so-called license agreement. I do not know specifically when that was; I think it was along about 1880. The American Telephone and Telegraph Company, has never controlled our Company, and does not control it now. We have a board

of directors of eight people, and have an executive committee composed of four members of the Board. The Board of Directors directs the affairs of our Company. Our Company has always been controlled by the Board of Directors. The American Telephone and Telegraph Company, have representation on our Board of Directors: they have one director on there. The present Director is Mr. H. B. Thayer, who was just elected at the last annual meeting in February. Prior to that time it was Mr. Theodore N. Vail. No American Telephone & Telegraph Company Director has ever attended one of the meetings of the Board. The American Telephone and Telegraph Company, through Mr. Vail or Mr. Thayer, or any resolutions, has ever sent any directions to us, as to what to do, nor have they ever dictated to us, as to how to run our company; the Board is absolutely independent, the Bell Company—no other Bell Company has any representative on our Board of Directors.

Q. Has any Director of the American Telephone & Telegraph Company, or a Director of your Company that's appointed by the American Telephone & Telegraph Company, ever voted in any meeting of the Board of Directors of your Company?

A. No, sir. Q. Then to what extent, Mr. McBurney, has the American Telephone & Telegraph Company, or its Associated Companies, ever been represented on your Board of Directors?

A. Only to a nominal extent, as I have related; that is 748 one Director, who has never attended a meeting and not actively participated in the affaird of the Company in any

degree

Q. Well, have they participated in any other way than as outlined by you through a representative on the Board of Directors?

A. No, sir. Q. Have you a license contract with the American Telephone & Telegraph Company?

A. Yes, sir, we have the so-called license agreement.

Q. And under that agreement do you make a payment to the American Telephone & Telegraph Company?

A. We make a payment of $4\frac{1}{2}\%$ of our gross earnings.

To whom do you pay that?

A. That is payable, I think, to the American Bell Telephone Company.

Q. It is payable to the American Bell Telephone Company?

A. Yes, sir, and it probably finds its way into the American Telephone & Telegraph Company finally.

Q. Well, out of what receipts does your Company pay this 4½% A. Well, it pays it out of our gross receipts; specifically, it is 4½% of the exchange service revenues, the private lines, public pay stations, and message tools, less uncollectibles.

Q. Did you include public paystations? Yes, sir, I included public pay stations.

Q. Ordinarily, it's your exchange revenue and toll line revenue?

A. Yes, sir.

Q. Where does your Company make the payment?

A. We make the payment in return for certain services rendered by the American Telephone & Telegraph Company under the 41/2% contract. 749

Q. You have heard the testimony given in another case,

given by Mr. Rhodes and Mr. Estabrook in another case?

A. Yes, sir, in the Fort Worth case.

Q. Well, in so far as the general services mentioned by Mr. Rhodes and Mr. Estabrook are concerned, does your Company receive those general services in return for the payment of 41/2% of its gross receipts?

A. Yes, sir, we receive those general services and I think we have availed ourselves of practically all of them, excepting financing. We

have always been able to finance our own requirements.

Q. Do you get the instruments that the Associated Company gets

here at Houston?

A. Yes, sir, we got the receivers, transmitters and induction coils, with a 3% over-stock, and the American Telephone & Telegraph Company, under the license agreement, repairs the instruments free of charge and replace them with new instruments, that is, with new improved types, as the latter are developed.

Q. Do you get the induction coils also?
A. Yes, sir.
Q. Transmitters, receivers and induction coils?

Q. If anything new in the way of new equipment comes out in the way of transmitters, receivers and induction coils, are you entitled to those?

A. Yes, sir, we simply ask for them and they are always forth-

coming.

Q. Do you get anything else except instruments?

A. Yes, sir, we get certain services as distinguished from

750 the instruments.

Q. What other service do you get, Mr. McBurney, that you can detail? Just go ahead and detail the services that you get from

the American Company.

A. Well, there are various services that we get from the American Company outside of what I have said with respect to instruments. and they might be said to be general and special; they cover every phase of the telephone business that is patent,-engineering, plant, commercial, accounting, financial, legal matters and discussions and, as I say practically

Q. (Interrupting.) Insurance?

A. Insurance, building operations, and practically every phase of the telephone businesss. Now, this information comes, as a general thing there is a constant flow from each particular Department of the American Telephone & Telegraph Company of this information. For example, the Legal Department sends out daily leaflets of decisions of the Courts and Commissions that are of interest to telephone companies; I think they publish a monthly digest of decisions. The Accounting Department gets out what they call standard

routines, which are the most efficient methods of handling the clerical processes of a particular subject of the telephone game,—as, for example, time records and pay rolls, handling of plant supplies or accounts for sub-stations equipment. We also receive an annual audit from the Accounting Department of the American Telephone & Telegraph Company, and we attach that audit to our Stockholders' Report; we value that very highly. As to the engineering phases of it, I assume that Mr. Estabrook and Mr. Rhodes have testified in this case practically the same as they did in the Forth Worth case.

751 Q. They did.

A. Well, I can't really add anything to that testimony.

Q. You receive the services mentioned by them?

A. Yes, sir. Now, to give you a general picture of the general information that I have in mind is this: That any time any question comes up in our business that we have any doubts on, and that we want further information on, we simply communicate with New York. I will give you a specific instance: Just a month or so ago we were looking into this question of machine switching, or automatic equipment, so-called. Two of our engineers went on to New York to the Chief Engineer's office; they were accorded every facility there. In fact, two men were assigned to them and they worked with them for a matter of a couple of weeks, and when they left Mr. Gherardi, the Engineer, told them that when their study had proceeded sufficiently he would be very glad to send one of his own men out on the ground to help them out. Now, this last week Mr. Allen, who, I think, is of Mr. Estabrook's staff, spent a couple of days with our Traffic Superintendent and came up to my office on matters of operating practice. Mr. Estabrook himself has been there a number We have had visits within the past year from Mr. Mandel and Mr. Atwater, of the Commercial Engineer's office. I had occasion myself, the last time I was in New York, to see Mr. Gherardi on the same question of machine switching, and, generally speaking, we simply regard the General Staff as the repository of the accumulated knowledge and experience of the Bell System in all phases of the business, and if we want to know anything about any phase of the business, we go to them, and if we go to them they give us the information gen-rally.

752 Q. And you don't pay anything for it?

A. No, sir, except the 41/2%.

Q. Who is Mr. Gherardi?

A. He is the Chief Engineer of the American Telephone & Telegraph Company.

Q. Does your Company pay any dividends?

A. Yes, sir.

Q. How long has it been paying dividends?

A. Well, I don't know just how long it has been paying dividends. We pay 8% dividends at the present time.

Q. Eight per cent?

A. Yes sir.

Q. How long have you been paying 8% dividends?

A. Prior to January 1st, 1918, for approximately ten years we paid 10% and prior to that time, 8%.

Q. So that you have been paying 8% or 10% for years?

A. Yes, sir. Q. Dividends?

A. Yes, sir.

Q. In addition to that you set aside any reserves for replacements? A. Yes, sir, we set aside what we consider to be a reasonable reserve for depreciation.

You say that your capitol stock outstanding is \$1,095,000.00?

Q. You say that your cap.
A. Yes sir,—and three hundred. Q. What is the approximate amount of your reserve for replacements, or your reserve for depreciation?

A. About \$2,931,000.00.

Q. On the basis of capital stock outstanding, it is about 30%?

A. Yes, sir.

Q. Because of the fact that you have been paying as high as 10% up to a couple of years ago and 8% now,-has that enabled you to finance yourselves individually?

A. That has been the reason that we could.

Q. That is the reason that you don't have to apply to the American Telephone & Telegraph Company for financial assistance?

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A. Yes, sir. & That's true, of cour-?

A. Our stock is quoted at a premium on the Exchange: with a par value of 50 it is quoted at 70.

Q. That would be the same as 140?

A. 140 on 100 par basis.

Q. How could you pay 8% and 10%, Mr. McBurney? Did you

have rates that were sufficient to pay all expenses and-

- A. (Interrupting.) Yes, our rates have provided for operating expenses and enabled us to set aside what we consider a ressonable reserve for depreciation, and also pay a reasonable rate of return to our stockholders.
- Q. I believe that you stated you were Vice-President of the Concinnati Suburban Bell Telephone Company?

A. Yes, sir.

Q. Well, as an officer and executive of your Company, what is your judgment as to whether or not the use of the property and the services rendered by the American Telephone & Telegraph Company under the so-called license agreement are worth the money being paid by your Company for such use?

A. Well, I consider the contract a very advantageous one for the Cincinnati Company. I think it is really worth more than we pay

for it, and it is really indispensable, because the services we 754 obtain from the American Telephone & Telegraph Company could not be obtained from nay other source.

Q. Why do you keep on paying 4½%?

- A. Well, it is a good thing and we want to continue paying it.
- Q. It has always proven advantageous? A. It has always proven advantageous.

· Q. If your Company did not have the arrangement and the American Company was willing to make the arrangement, state whether or not you think it would be a sound business proposition to enter into the contract?

A. I most emphatically do.

Q. Are you familiar with the payment made by other Associated Companies in the United States, where the stock is controlled by the American Telephone & Telegraph Company?

A. I understand that it is similar to the one that we are making.

that is, 41/2 % of the gross earnings.

Q. That is, the arrangement is just the same as that with your Company?

A. Yes, sir.

Q. And the arrangement is identical, as far as you know?

A. Yes, sir: of course, the use made of the arrangement by the different Companies may, perhaps, vary. As I say, I think we utilize all of the various services, with the exception of financing.

Q. Are you familiar with the property and services which the

American Company furnishes other Associated Companies?

A. Generally, yes, sir.

Q. How does the property and service which the American Company furnishes the Associated Companies compare with what is furnished your Company?

A. It is the same.

755 Q. Do you know whether the original license contract with your Company provided for the American Company to buy any additional stock in your Company at any future time?

A. Yes, they have the same right as any other stockholder,—that

is, to subscriber to a proportionate share of any new issue.

Q. Does the American Company have the right to purchase all of

A. Only its proportionate share.

Q. It can only purchase 30% without going in the open market?

A. Yes, sir.

Q. They never have had more than 30% of your stock?

A. No, sir, they never had more than 30%. Q. When you undertake to build buildings do you get any services

A. Well, whenever we undertake to build a new exchange, it has been our general practice heretofore for the Company's architect, Mr. Hake, to make a trip to New York and get their ideas on the subject. We did that when we built our new general office building in 1914. We did that a couple of years ago when we erected our new Woodman Exchange, and only recently Mr. Hake was in New York in connection with the new exchange that will house this automatic equipment that I spoke of previously in my testimony, and he has always gotten some very good ideas there; and with respect to the central office equipment, why we have always, when we put in a new exchange, asked one of the American Telephone & Telegraph Company's engineers to come out and look over our plans and tell us what the latest developments of the art were.

Q. You have some engineers of your own, haven't you?

A. Oh. ves! Q. Why don't you have your engineers to do all this work and save this 41/2 %?

A. Well, we haven't the person-ell in a small company, like ours, to go into extensive development and research work like that; we are not financially able to maintein such an organization, if we had the person-ell; then, if we did it, we could not get the accumulated experience of all the Bell companies.

Q. So this service could not be performed by you for yourself?

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Q. Even if you had the money?

A. No. sir.

Q. What were the total gross receipts of your Company last year?

A. \$4,077,014.00.

Q. What were the total amount paid to the American Telephone & Telegraph Company under the license contract?

A. \$176,896.75.

Q. How many stations has your Company?

A. 104,500, approximately.

Q. The American Telephone Company furnishes the instruments for all those stations?

A. Yes, sir.

Q. What is that instrument service worth, in your judgment?

A. I haven't made any calculations recently on the value of that instrument service. We made a study some time ago and the best of my recollection is, we figured that the instrument service, itself, was worth in the neighborhood of a dollar.

Q. A dollar a station?

A. A dollar a station, but I won't be positive about that because, as I say, that was made some time ago.

Q. You say the total amount paid was \$176,000.00? A. Yes, sir.

Q. And the total number of stations 104,000?

757 A. 104,500.

Q. So you are paying \$72,000.00 a year over and above the instrument service for that other service?

A. Yes, sir.

Q. Do you feel like you are getting your money's worth?

A. Yes, sir, most assuredly.

Q. Even without the financial services?

A. Yes, sir.

Q. Do you have a contract with the Western Electric Company, like the other Associated Companies have?

A. Yes, we have what is known as the standard supply contract.

Q. Do you feel that that is advantageous to you?

A. We entered into that contract on September 1st, 1913, and I am rather familiar with it because, at that time, I had charge of the direction of the contracts, so to speak, and the result of that was, in the first year we cut supply expenses, which is the cost of ware-housing and handling supplies, exactly in half; as I recall it, we 758

figured that we saved at the end of the first year, under the operation of the supply contract on account of reduction in material costs to us, in the neighborhood of \$35,000.00, and also reduction in prices of material bought from the Western Electric Company, because we got it under more favorable prices under the supply contract than theretofore.

Q. That benefit has continued from year to year?

A. Yes, sir.

Q. So you figure on past experience that about \$35,000.00 is saved in that respect alone?

A. Yes, sir.

Q. Have you ever had the idea that the Western Electric contract was a contract that was put over on you by the American Company in order to make additional dividends?

A. No, sir, we entered into the contract absolutely on our

own volition.

Q. Are you free to get it any time you want to?

A. We are free to get it any time we want to, but as a matter of fact, we sometimes make our purchases outside if we feel we get better prices.

Cross-examination.

Questions by Mr. Howard:

Q. The American Tel. & Tel. Company takes out of the earnings of your Company each year \$176,000.00?

A. We pay them for certain services around \$176,000.00 per

annum.

Q. And you consider and feel that you are getting your money's worth?

- Q. You say that you figure that the induction coils, receivers and transmitters are worth a dollar a year to you? Just enlighten us a little bit on it.
- A. I said at the time that I was not familiar with it, but that the best of my recollection,—this study was made several years ago.

 Q. You are the manager of the Company?

 A. Yes, sir.

Q. And you are interested in what you get for your money?

A. Sure.

Q. Well, let's get down to the dollar a year for these instruments. Have you ever concerned yourself about what it costs to manufacture them?

A. No, sir, I have not.
Q. You weren't concerned in that at all?

A. I don't know.

Q. But you are paying a nice sum for them each year? Let's see why you did it. Now, what I understand the dollar 759 a year to be is the cost-

A. (Interrupting.) That is the best of my recollection of the figure that we arrived at in a study we conducted several years ago.

Q. All right, let's have as specific information as you can give.

A. Of course, I did not make the study myself.

Q. Who made it?
A. The Auditor of the Company.

Q. Of what Company?

A. The Cincinnati Suburban Bell Telephone Company.

Q. He reported to you?

A. Yes, sir.

Q. Were you interested enough to go into detail with him at all? A. Yes, sir.

Q. Well, let's see to what extent you went into detail,-how did you arrive at a dollar?

A. Well, a good deal of water has run past the mill since that

Q. I know, but this is quite an item,—you are paying out \$176,-000.00 a year.

A. Well, we considered, under such service, the cost of the instru-

ments on the open market.

Q. Well, what was the cost of the instruments upon the market? A. I can't approximate that now; I haven't that figure,—probably in the neighborhood of something over \$4.00, I would imagine.

Q. Incidentally, you judge something over \$4.00?

Mr. D. A. Frank: Five dollars and something, according to the testimony.

Q. Well, now, why \$4.00, Mr. McBurney? 760

A. That's my recollection. Q. Your recollection from what?

A. From the figures that were submitted at the time.

Q. Submitted at what time? A. When the study was made.

Q. And when was the study made?

A. Several years ago. Q. "Several,"—that's very indefinite,—a very indefinite expres-Can't you be more definite?

A. Probably, if I had known that I would be cross examined on it,

I could have recollected it exactly.

Q. We are trying to get some proportion of \$176,000.00 out of this amount, and we want to know. You can't be any more definite about the \$4.00?

A. No, sir.

Q. Did you concern yourself far enough to know if those instruments were protected by any kind of patents?

I understand the patent expired some time ago.

Q. Was there anything in that respect that prevented their use from any investigation of the question? Now, did you ever make any study of how much it cost the Western Electric Company to manufacture this little article.

A. No, sir, I did not.

Q. They are made up of a lot of little parts manufactured by machinery and manufactured very easily, are they not?

A. Well, that's not my information on the subject.

Q. That's not your information on the subject?

A. No, sir.

Q. Well, what is your information, and what investigation did you make to get your information?

761 A. Well, personally, I have never been through the Hawthorne Factory, or seen these detailed operations of making telephone instruments.

Q. And just along the standardized operation, where they are working so beautifully, and they want to charge you \$5.00 or \$4.00

for this little instrument—you think that's the thing to pay?

A. Oh! no.

Q. Well, what do you do? If my suggestion is not what you do,

tell me that you do do.

A. We understand that under the supply contract that we obtain telephone apparatus from the Western Electric Company at cost, plus a certain percentage, and in comparing prices that we have to pay for telephone apparatus from the Western Electric Company in judging the fairness of the price we make two comparisons—of the prices we have to pay for similar apparatus that we obtain from other sources, and, as I told you, our experience showed that in the first year of the operation of the contract that we made a material saving on the total purchase price of the total amount of supplies that we got from the Western Electric Company.

Q. When did you first make the arrangement?

A. September 1st, 1913.

Q. Where did you buy prior to that?

A. In part from the Western Electric Company and part from

other supply houses.

Q. Then the Western Electric Company was discriminating before you made this contract and was selling to you at a higher price than to the Associated Companies?

A. I wouldn't call it discrimination.

7.62 Q. What do you call it?

A. We were not enjoying the same favorable prices as we afterwards enjoyed after making the contract.

Q. You were paying 41/2% prior to that?

A. Oh! yes.

Q. Now, as the Manager of a telephone company, has it ever entered your mind to inquire, inasmuch as these things are not protected by any patents of any kind, why they don't sell them outright to the buyers—why they keep them there and set down an indefinite amount—an indefinite and uncertain amount of money each year? Why are they not selling them outright, just like they do the switch boards, these lead cables, and other equipment?

A. Personally, of course, I don't know the basis for the arrange-

ments they make.

Q. They are doing it and make you go ahead, and that's all right?
A. No, the particular advantage that we enjoy under it is that any time a new and improved type of apparatus is developed, all we have

to do is to ask the American Telephone & Telegraph Company for it and we get it, and our subscribers get the benefit of it.

Q. Well, any manufacturer manufacturing this new equipment

is perfectly willing to sell them?

A. Yes, sir, but immediately the question would come up as to the proper allowance for the old equipment, as, ordinarily, a telephone man wouldn't want to junk all of his apparatus, as it might be giving pretty nearly ss good service.

Q. Now, since 1913 what particular improvement has been made in the apparatus-in the induction coils, transmitters and receivers?

A. I am not an engineer and can not mention it specifically.

763 Mr. D. A. Frank: Why 1913?

Mr. Howard: He said that's when they made the contract.

(By Mr. Howard:)

Q. Can you tell me any particular improvement that you have called for and that you have availed yourself of since 1913?

A. Well, the only thing that I could say would be from a nontechnical standpoint. I understand that the existing apparatus has improved transmission qualities over that in 1913.

Q. In what way?

A. Transmission.

Q. In what way has it improved it?

A. In transmission,-in other words, you can hear more clearly and a greater distance.

Q. That's in Cincinnati?A. That's every place,—it is here.

Q. That you have got some general, vague idea that transmission has been improved. You are not getting any more from your subscribers on account of these improvements, are you?

A. No, sir.

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Q. All right. Then, notwithstanding, we don't know anything about what the cost of these instruments would be, or what the cost to manufacture is, or how much the profit of the Western Electric Company is,—how much profit the Western Electric Company is making upon them, or any of these things, or what a fair return upon the cost of the investment would be,-we have guessed that they are worth a dollar apiece.

A. You have, perhaps.

Q. That's what I understood you to say.

A. Oh! no.

Q. Well, how do you get at a dollar,-you haven't been able to tell me in any way.

A. Well, if you will read the testimony of the stenographer, he can no doubt give you my exact words.

Q. Well, you know what they are. Let's have them again. A. You heard them and know pretty well what they were.

Q. Well, how do you arrive at the dollar,—I am asking you again. A. Well, as I stated before, it was a study made by our Company several years ago,—made by the Auditor of the Company, and to the best of my recollection, the figures showed that the services were worth approximately a dollar.

Q. You don't know how you arrived at it, and you can't give us

the detail of it?

A. I would have to have a very unusual mind to go back and take a haphazard occurrence in 1913 and remember every detail. Perhaps your idea of the function of an executive officer is somewhat—

Q. (Interrupting.) What is the chief function of an executive officer? To keep his operating expenses well under control and make his industry show a profit from the rendition of fair service to

the public, isn't it? That's the purpose of an executive?

A. Well, those are the results that we desire to obtain, but I will say that his functions were to set up the organization, to select the person-ell, to determine the officers of the Company, and to generally supervise the work. Now, the telephone business itself, is so complex, is so highly technical, that no one individual could have a knowledge of all departments,—he must select people in whom he has confidence.

Q. I understand, Mr. McBurney, that you came down here to enlighten us about the benefits, and to testify with reference to them. If you had not come, I would not have said anything about it, but you came here to tell us about the great advantages of this contract, and my questions are all bearing upon that question, as to seeing whether you are right or not. As I said before, you might not be right, and we can't get any definite information as to the value of these induction coils, receivers and transmitters, but having that testimony—

A. (Interrupting.) In any event, I would not set my particular testimony up against specific technical testimony, it it has been

given.

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Q. Well, even if we accept the figure that you suggest, that leaves \$72,000.00 that you paid out last year. Now, let's see what you got for that. You said, I believe, that some engineers came over to Cincinnati?

A. I simply related certain specific examples, that was all, and

that, by no means, covered the whole thing

Q. Well, let's see what they did for you in 1919. You paid them \$72,000.00 that year, aside from this other \$104,000.00. Now, let's see what they did for that. First, in the way of engineering, you referred to some commercial engineers. Let's see what they did for you.

A. Well, as a result of the visit—. Now, understand me, as I say,

I am only giving you these as specific Examples of the service.

Q. All right, let's have them. That's what I want.

A. I told you that there was a continuous flow of information from New York in the way of bulletins, and so forth, and so it is not fair to take one specific instance or example of these services and then say: "That represents the total value that you have received from that source during that year."

Q. I don't want one. Let's have them all; let's have the first one.

A. As I say, the services cover practically every phase of the tele-

phone business.

Q. Well, that don't tell me anything; we spent \$72,000.00 here, and as the chief executive and Manager of the Company, let's see what we have gotten for the money. You haven't spent this \$72,-000.00 without letting your mind dwell to some extent upon the specific and definite benefits that have come to you and your stockholders.

A. We naturally end-avor to measure it.

Q. You come here and tell us about the benefits of this contract. Let's see what they are. Let's take the \$72,000.00,—eliminate the \$104,000.00 and let's put your finger on something definite that these people did for you in the year 1919.

A. Well, I will just simply say, for example, in connection with the visit of Mr. Mandell, we established a new contract order,-

routine

Q. What do you mean by that?

A. Why, that's simply a single proceedure in getting our contract orders covering installation, removal and change, and so forth. as a result of the suggestions.

Q. Well, what did that save?
A. I would say that that saved, alone, in the neighborhood of \$10,000,00 a year.

Q. Well, let's see how it did it. How many less men did you

employ?

A. It cut down the number of people who were engaged in that class of work.

Q. Well, how many? A. Wait a minute.

Mr. D. A. Frank: Give him a chance.

A. I think we had about thirteen in that department; it cut it down to about seven, is my recollection. I remember it reduced the number of operations. We were getting out, I think, about twelve copies of the contract order and it reduced the number of copies of the contract order to seven, and, I think, we get out in the neighborhood, I think of possibly 60,000 of these contract orders in the course of a year.

Q. All right; let's see what suggestion it was that brought about

all this. Now, what he suggested, you did?

A. Simply certain re-routing through our various departments, which enabled us to eliminate certain copies of the contract order.

Q. You say that you had certain methods of routing these things in the handling of your contracts, and this gentleman came along and showed you a better way? Now, what was the old method and what is the new method?

A. Well, the old method provided that there was considerable duplication in the way of checking of the contract order; also provided, as I said before, a larger number of copies of the contracts, and we found under the new arrangement that considerable lost motion was eliminated: that we could write economically a larger number of copies at one time; not only was there an economy in the use of paper, but also an economy in the method of writing. We formerly had inserted the carbons between each of the nine copies of the paper; under the new arrangement we used what was termed a fanfold filler. Now, under this fan-fold filler arrangement the carbon is fed continuously,-there is no change of carbon and the typist

dosen't have to take out the carbon and reinsert it at the next

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order,—she simply tears it off.

Q. Now, the fan-fold filler, that's some improvement, some little improvement that some manufacturer or inventor had gotten up in order to handle carbon paper?

A. Yes, sir.

Q. The manufacturer, himself, as claiming all of these improvements and benefits over the old methods?

A. I have no doubt he was, yes, sir; but the American Telephone

& Telegraph Company suggested it to us.

Q. Well, you could have gotten it from the manufacturer just as well?

A. We could have had we known about it.

Q. In other words, you think you are paying \$10,000.00 for that manufacturer's improved method of handling carbon paper.

A. Oh no; that's a conclusion that you have drawn that's errone-

Q. Now, you have stated that formerly you had been putting

carbon sheets between each of the nine sheets of paper?

A. You heard my testimony, also, as to the elimination of a certain number of copies; also the elimination of certain checks that we were using, and I don't want you to draw your conclusion on the whole thing on the basis of the fan-fold filler.

Q. We are talking now about this fan-fold filler. Now, that's

one of the things,—put it that way.

A. One element.

Q. That saved the \$10,000.00. Let's take that up first. Now, as I understand it, it is that some manufacturer or inventor had conceived this idea and put it into practical effect, and was soliciting trade throughout the commercial world for his improved method of pulling out those things.

A. The device was on the market,—whether he was solicit-

769 ing trade, I don't know.

Q. The device was on the market, and all the benefits of it were an open book,-there were no secrets about it, and, so far as this particular matter goes, all that was done was for the American Tel. & Tel. Company's man to call your attention to that new improvement of the independent manufacturer? Well, so much for that. Now, let's take the next one,-we have disposed of that.

A. I didn't agree to that at all. Q. Well, let's dispose of it.

A. I think you overlooked the fact, and are apparently acting on the assumption that all knowledge with respect to a particular thing rests with everybody.

Q. No, I am not doing that, Mr. McBurney. I think I tried to

state it fairly.

A. Probably the reason that the American Telephone & Telegraph Company knew about this fan-fold filler was because of their research upon that particular subject.

Q. Although an independent or individual manufacturer was manufacturing them and trying to make his products known to the

commercial world?

A. Also there may have been many other similar devices on the

market, but this, in this judgment, was the best one.

Q. But I understand that you were not using any such device, but used the old-fashioned method of sticking in nine carbons between nine sheets of paper?

A. Prior to that time, that is correct.

Q. All right; what the American Tel. & Tel. Company did in this regard is that they called your attention to this new device,—That's correct, isn't it?

A. Yes, sir.

Q. All right; let's see what else went into that \$10,000.00. What else did that held you in the contract department about those matters?

A. Well, as I said before, it reduced the number of employees in the department from approximately——

Q. (Interrupting.) What did that,—did this fan-fold filler do that?

A. Reduced the number of operations.

Q. This fan-fold filler did?

A. That, to a certain extent, but also eliminated all these various checks, and we used less than we previously had.

Q. What was there about that that any ordinary intelligent ac-

countant wouldn't discover?

A. Well, if we all knew everything that's desirable about any particular industry, we would all be on the same basis, but unfortunately we do not. Even you might not be conversant with certain phases of legal procedure.

Q. Well, you can hardly imagine that.
A. I was merely using an extreme case.

Q. Well, we will let it go, but you really ought not to make that reflection. Well, now, Mr. McBurney, I understand that you were doing a little unnecessary checking in this contract department, and this man came down here and cast his eagle eye over it and said: "Cut it out!"

A. Why would you say that was little?

Q. How long had that erroneous method been pursued in your department?

A. Why say "little?" I wouldn't call it erroneous, because it was the best method, according to our knowledge, at the time.

Q. Well, erroneous in that there was a better method in existence. How long had you been pursuing the old method?

A. For a matter of several years,—I don't know.

Q. What's this gentlemen's name?

A. Mr. Mandell.

Q. Had Mr. Mandell been in to see you before in the seven years?

A. No. sir.

Q. He was here in 1919, and hadn't gotten around to see whether

you were routing those things properly for seven years?

A. Mr. Mandell came around in the course of his study on a trip that he was making all over the country in connection with this contract work.

Q. And it took him from 1913 to 1919 to get around to your de-

partment?

A. I didn't say that at all.

Q. Well, he didn't get there before?

A. He got there that specific time. I don't have any especial system of keeping on his trail, and am absolutely unable to account for his movements between the time he first took employment with the American Telephone & Telegraph Company and the time he appeared at the Cincinnati Company.

Q. I was asking you if he didn't fail to get around there for

six years?

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. A. I don't even know that he was employed by the American Telephone & Telegraph Company for six years.

Q. Well, whoever held his position with the Company, any other

auditor of the Company?

A. Oh, yes, we had an annual audit.

Q. But nobody caught this thing for six years?

A. No, sir.

Q. Well, accepting the \$10,000.00 as being a good investment,

that leaves \$62,000.00. Let's see what else they did.

A. Well, it would be very difficult for me to place a value on it for this reason, as I explained to you, if I could be in a position to testify to the exact facts of each particular service that we received from the American Telephone and Telegraph Company, I would have to have the combined knowledge of each particular department of the telephone business, and I certainly would not arrogate that to myself.

Q. But you come here and tell us about it, and now we want to know the details. You say they are services, and yet you don't point out to us where this \$176,000.00 is absorbed.

A. No, but I will tell you how I arrived at my conclusions, which is this, as I have said before, the telephone business is a very complex business and it isn't possible for any one man to know all about it, and the best he can to is to do as is commonly recognized as good business judgment, is to select capable technical men and put them in charge of these departments and supervise their work. not making a comparison, but I have always understood that Mr. Carnegie's great success was due to his faculty of selecting his lieutenants, and I have no doubt he didn't know anything about the processes of making Bessemer steel, but he did know, however,

whether or not a particular department was making money or not.

A. My statement is in the record.

Q. You have how many engineers in your plant at Cincinnati? A. We have, -well, let's see, -we have six or seven.

773 Q. Six or seven engineers?

A. Yes, sir; some of them supposed to be pretty competent engineers.

Q. Some of them supposed to be pretty competent engineers.

A. Yes, sir, in their particular line. Q. Well, what is this particular line?

A. It depends upon whether —, traffic engineers.

Q. Well, have you a traffic engineer?

A. Yes, sir.

Q. Have you a structural engineer?

A. No, sir, we haven't a structural engineer; we have an architect who takes the place of a structural engineer.

Q. Well, what branch of the telephone industry that requires an

engineer are you lacking in?

A. I would say research and development work. In other words, the functions that are performed by the American Telephone & Telegraph Company's General Staff.

Q. And yet, for this \$72,000.00 a year you haven't been able to point out in the last six years anything that has come to you as

the result of their research?

A. I haven't been able to give you detailed figures in each particular case.

Q. Nor have you been able to give me a definite illustration up to this point, of the improvements.

A. Yes, I have told you-

Well, you did say something about trans-Q. (Interrupting.) mission in a general way, but aside from that, can you give me one?

A. Why, I mentioned in connection with the service of the Ac-

counting Department,—the value of the annual audit.

Q. The Accounting Department. I am speaking more of developments along engineering lines. We will count that as

774 Then, now, let's have number three.

A. Of course, as I say, it is rather difficult to make an exact estimate of value of that kind of thing, particularly from a plant standpoint, because, for example, we might put in, if we had not the advice of the Engineering Staff of the American Telephone & Telegraph Company what would be an absolute type of central office equipment. We can measure, in a general way, the advantages received from the American Telephone & Telegraph Company by comparing the results that we obtain with surrounding companies which don't have the same advantages.

Q. That would be a right difficult thing to do this morning,there is so much room for differences. You see, you are spending \$176,000.00 a year, and I am only interested to know, even in a general, fairly evident way, what you have gotten for it, because you argue from that that we ought to accept it here and we want to know what we are getting for it. Now, you mentioned what you mught call—you refer to two instances,—now, can you give me the third? Well, if you can't, let's turn then to the—a minute to your association with the American Tel. & Tel. Company. You say that they own 30% of your stock?

A. Yes, sir.

Q. You say they can't buy any more of the stock?

A. They can, in the open market.

Q. Have you any idea why they don't buy it?

A. I don't know.

Q. They have whatever influence one-third of the stockholders would have in the management, or in shaping the policy of your Company, do they not, Mr. McBurney?

A. The only way, I think, in which they could exercise would be by mental telepathy,—they are not present at any

of our meetings.

Q. They could exercise quite a bit back of that 30,000 shares?

A. No, sir; we are absolutely independent in our determination of what our policies will be.

Q. Mr. McBurney, there is what is known as some sort of association of independent telephone companies, isn't there?

A. I believe there is some such association.

Q. Does your Company belong to it?

A. No, sir.

Q. Have you ever discussed with the independent companies the manner in which you are regarded by them, as to whether or not you are an independent company, or not?

A. Well, we are evidently not what is known as an independent

Company we are a non-controlled Bell Company.

Q. Don't the independent companies refer to your Company, and to the New England Telephone Company, as decoy ducks, or stool pigeons for the American Tel. & Tel. Company?

A. I have never heard any such reference.

Q. Have you ever discussed with any of the independent telephone companies, or ever heard any remarks about your relations with the American Telephone & Telegraph Company?

A. No, sir.

Q. How many times have you testified in rate hearings for the

American Tel. & Tel. Company?

A. I think this is the—let's see, I have testified at the request, not of the American Telephone & Telegraph Company, but at the request of the particular associated Company involved in, I think, four cases,—this makes the fourth.

Q. That's mostly during this year or last year,—within compara-

tively recent years?

776 A. Within—Recently, because my connection with the Telephone business is comparatively recent,

Q. These rate hearings all over the country were starting about

two years ago, were they not?

A. Oh! no. If I had to go around to testify in rate cases, I wouldn't do anything else.

Q. Well, you have been devoting considerable of your time recently to testifying in rate cases?

A. No, sir; I testified once last year, this is the first time this year,

and, I believe, possibly twice the preceding year.

Q. You testified in one case where the 4½% charge has been questioned, have you not?

A. I have testified on the experience of the Cincinnati Suburban

Bell Telephone Company on the 41/2% contract.

Q. You and Moran are present most of the time-you know Mr. Moran?

A. I know Mr. Moran.

Q. You have met him at these hearings, or heard his depositions read at these hearings?

A. I have been present four times. Q. And Mr. Moran was there?

A. No, sir, Mr. Moran was present only in one case.

Q. His Depositions were taken in other cases?

A. I don't know.

Redirect examination.

Questions by Mr. D. A. Frank:

Q. Mr. McBurney, this is the fourth time you have testified with respect to the 41/2 %?-is it? 777

A. Yes, sir.
Q. Two of the other three times you testified at my request, didn't you? A. Yes, sir.

Q. One time in Jefferson City and once in Fort Worth?

A. Yes, sir .

- Q. And would you have to pay anything for the maintenance of the instruments?
- A. Well, we, of course, would have to maintain them ourselves. Q. And would have to set aside something for depreciation, would you?

A. Yes, sir.

Q. You would have to count something for contingencies?

A. Yes, sir, interest on investment.

Q. Interest on investment?

A. Yes sir.
Q. All together, it would cost you somewhere in the neighborhood of from 23% to 25% per year to maintain these instruments?

A. Well, I can't give you the exact figures. Q. That doesn't sound unreasonable, though, does it?

A. I should say that that was approximately correct.

Q. Are these instruments as good, or better, than any other instruments that you can buy on the market?

A. We think that they are the best.

Q. You stated that the transmission in these instruments that are furnished has been improved within the last seven years. Do you mean that the instruments have been improved in such way that they can be used for this long distance connection as, say, between Cincinnati and San Francisco?

A. That's my understanding.

778 Q. And you get the benefit of that immediately, without any additional payments?

A. Yes. sir.

Q. Counsel asked you if, on account of this improved transmission, you were getting any more money from the subscribers. The subscribers are getting something more?

A. The subscriber is getting more value for the same money that

he is paying us.

Q. And these improvements that have been going on in these instruments have been given you year by year, from the very geginning of this relation,—isn't that true?

A. Yes, sir.

Mr. Howard: Mr. Frank, just let him testify.

(By Mr. D. A. Frank:)

Q. State what the facts are, as to whether you have been getting these improvements from the very beginning of the relations.

A. All of the improvements that the Bell System has made, from its inception, have been available to the Cincinnati Company and have been used by the Cincinnati Company.

Q. State what your opinion is as to the value of your relation with respect to the future developments, as well as compared with the past

developments of these instruments, and-

A. (Interrupting.) Well, the general opinion of the students of the subject is that the ground has only been scratched in electrical transmission. Now, we have this guarantee, that whatever is developed by the Bell System we will have the advantage of. History

shows that the major developments in the art of telephony have originated with the Bell System,—the Bell System's en-

gineers were the first ones to make trans-continental telephony possible; the wireless telephone engineers of the Bell System talked with the Eiffel Tower and Arlington, Virginia, and I am confident that if wireless telephony ever becomes commercially possible, it will be the Bell System that makes it so, and if the Bell System does make it so, the Cincinnati Company will have the advantage of that.

Q. Is that one of the advantages of this arrangement?

A. Yes, sir.

Q. Did you know that you were protected by something like five thousand patents owned by the Bell Company at the present time?

A. I did not know that it was that amount; I knew that there

were a great number.

Q. Counsel asked you if you knew what profit the Western Electric Company is making on the instruments. Does it make any difference what profit they are making?

Mr. Howard: Please don't lead him.

(By Mr. D. A. Frank:)

Q. No matter what profit the Western Electric Company might be making, if you were to purchase these instruments in the open market, would you be compelled to pay-

Mr. Howard (interrupting): Compelled to pay whatever they asked for it.

(By Mr. D. A. Frank:)

Q. Do you agree to that answer? A. Yes sir, that's satisfactory to me.

Q. Now, you were asked to detail about Mr. Mandell, and the statement was made to you by Mr. Howard that this man had not

been there within seven years. Do you know how long the system that was evolved by Mr. Mandell, under which you 780 claim that you saved \$10,000.00 a year, do you know how long that system was in vogue before you got the benefit of it?

A. I think we probably got the benefit of it immediately upon its inauguration, because I know Mr. Mandel had been engaged in the study of that particular proposition on the Pacific Coast; that he had inaugurated the system out there and came back by the Cincinnati Company on his return trip to New York.

Q. On any of these improvements, do you have to wait seven

years if you want to know about them?

A. As soon as an improvement is standardized in any department, that information is sent out to the field,—its then available to the field.

Q. What kind of an organization have you, Mr. McBurney?

A. We have a standard organization.

Q. Your Company has a President and Vice-President, and a Board of Directors?

A. Yes, sir.

Q. What other officers?
A. Well, we have the regular—that is, we have the general organization,—executive, accounting, engineering, legal department, commercial, traffic, plant,—the standard organization.

Q. Standard organization?

A. Yes, sir.

Q. If you were purchasing your instruments in the open market and paying \$4.50 or \$5.00 for each instrument, and any radical change was made in them, and you wanted to keep up to date, what would you have to do if you got the new instruments?

A. We would have to junk old instruments and pay the

781 new price for the new ones; junk the old instruments at a

considerable loss, the chances are.

Q. Well, regarding the changes in these instruments, is there any advantage under the present arrangement in being able to get new instruments at any time to take the place of any defective ones?

A. Certainly, and there is this particular advantage from a practical standpoint,-that you get the latest improvements in the art.

Q. You get the latest all the time, without any additional payments?

A. Yes sir.

Q. I believe you stated that if you make any changes in your central office equipment, that it would be very desirous to you, very advantageous to you to have the very best advice with respect to central office equipment?

A. Yes, sir.

Q. What is your opinion of the character of construction of central office equipment being used today? Is that, or not, first class?

A. We think it is the best to be had. I might give you an illustration of that, for example,—this year the Western Electric Company was unable to furnish us the total amount of our cable requirements; they simply did not have the manufacturing capacity,—they allowed us our pro rate share. They said;—Mr. Thayer, in his letter to Mr. Kilgore, said, if we wanted to avail ourselves of any outside manufacturer of cables we could do so. We did not want to do so, because several years ago, before we went into the supply contract

with the Western Electric Company, we had tried that very thing, and it was very unsatisfactory, and so we prefer to wait

in order to get the Western Electric stuff.

Q. The men in your organization are pretty good business men, aren't they?

A. They have that reputation.

Q. Do you think that they would be paying \$176,000.00 a year to the American Company unless they thought they were getting their money's worth?

A. No, sir.

Q. Are any of your officers connected with any banks?

A. Yes, sir; we have what we think a very strong directory, composed of Mr. Kilgore, the President of the Company. He is very largely interested in Cincinnati generally as the President of the Street Railway Company there, a large real estate owner, and he is interested in one of the large banks there. Mr. Chas. P. Taft, brother of Ex-President Taft, is one of the Wealthiest men in Cincinnati, usually conceded to be a very excellent business man. Mr. Edward Guepper,—he is Chairman of the Executive Committee of the Citizens' National Bank, one of the best known and most influential bankers in the city. Mr. Geo. W. Lewis, he is a retired capitalist. Those are some of them.

Q. When this study was made to determine whether or not the license contract was of advantage to the Cincinnati Company, were those gentlemen convinced that it was of advantage to your

company?

A. I don't know whether that particular proposition went up to the Board as a whole. Mr. Kilgore was on—

Q. (Interrupting.) And Mr. Kilgore-

A. (Interrupting.) —You are referring to the study as to the value of the instruments,—the value of the instrument service alone? I wasn't on the Board at that time, and so I do not know whether the Board passed on it or not.

Q. But you do know that your Executives approved of the arrangement?

A. Yes, sir.

Q. And they think it a very valuable arrangement?

A. Yes, sir.

Q. And if you didn't have the arrangement, and thought it were possible to make it, you believe that it would be wise for the company to make it?

A. Yes, sir.

Mr. D. A. Frank: That's all.

Recross-examination.

Questions by Mr. Howard:

Q. You say your Board is fully convinced that you are getting your money's worth of the \$176,000.00 a year?

A. Yes, sir.

Q. The American Tel. & Tel. Company has 30% of the stock that elects that Board?

A. They have nothing to do with the election of the Board. Q. They have 30% of the stock?

A. No monority interest can elect the Board.

Q. Well, they have 30% of the stock of your company, have they not?

A. Yes, sir.

Q. They have nearly one-third of the voting power that elects this Board?

A. Yes, sir.

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Q. What other stockholder owns an amount of stock equal to that owned by the American Tel. & Tel. Company?

A. No one stockholder owns an equal amount, but the control of stock rests with Mr. Kilgore and his associates.

Q. You are sure of that, are you?
A. Yes, sir.
Q. Two-thirds of this stock is subject to be bought on the open market by the American Tel. & Tel. Company at any time they want to get busy,-isn't that a fact?

A. And want to pay the price.

Q. And the influence of the American Tel. & Tel. Company is in that exchange, surrounding the operations of this Company?

A. I don't see how they are in a position to exercise any influence. Q. The Board of Directors are anxious to please the stockholders, are they not?

A. They administer the affairs of the Company in the interest of

the stockholders.

Q. The largest one of which is the American Tel. & Tel. Company?

A. Yes. sir.

Mr. Howard: That's all.

785 Redirect examination.

Questions by Mr. D. A. Frank:

Q. Has the American Telephone & Telegraph Company ever tried, in any way, to control any operation of the Company?

A. No, sir. Q. Has the 70% always controlled?

A. There has always been a local majority at the annual meetings of the stockholders.

Q. They are rather jealous of that control? A. Why, they are.

Q. And if the American Telephone & Telegraph Company started · in to get control, they would have to pay a pretty good price?

A. They certainly would. It is a very closely held proposition.

Mr. Frank: That's all, Mr. McBurney.

Recross-examination.

Questions by Mr. Howard:

Q. Is there any friction between the American Tel. & Tel. Company and the other stockholders?

A. No, sir, there is not.

Q. Everything is running pretty smooth and the American Telephone & Telegraph Company are well pleased with the arrangement?

A. They have never raised any objections.

Q. The American Company has never raised any objection to this?

A. And if there have been certain disagreements in regard to interpreting the contract, they have always been adjusted after-786 wards.

Q. They are satisfied with it?

A. They made it themselves, and so far are satisfied with it.

Redirect examination.

Questions by Mr. D. A. Frank:

Q. The American Telephone & Telegraph Company has always treated your Company fairly?

A. Yes, sir.

Q. And you are satisfied with the treatment received from the American Company?

A. Yes, sir.

Recross-examination.

Questions by Mr. Howard:

Q. If they closed in this control and bought up the 20% of stock in this Company and the New England Telephone Company they wouldn't have anybody in the whole United States to pose as an independent Company and to testify as to the benefits the independent companies derive from this 41/2% contract, would they?

Mr. D. A. Frank: I think that's clearly objectionable, your Honor. Mr. Howard: I think it is self-evident. That's all. Mr. D. A. Frank: That's all, Mr. McBurney. 787

(By Mr. Howard:)

Q. You spoke about mistakes in central office equipment,—the Western Electric Company has competent engineers, have they not? A. And they work in conjunction with the engineers of the American Telephone & Telegraph Company.

Q. And it is a fact that the American Telephone & Telegraph

Company owns and controls it?

A. I do not know the exact relationship.

Q. So, then, it is up to the Western Electric Company to see that the proper switch boards are installed?

A. It's one of their functions to do a good job.

Mr. Howard: That's all. Mr. D. A. Frank: That's all.

JAMES T. MORAN testified for the plaintiff by deposition as 788 follows, to-wit:

Direct interrogatories:

My name is James T. Moran, I have lived in New Haven, Connecticut, and am connected with the Southern New England Telephone Company; I am President and General Attorney of the Company. I have been connected with such Company since September, 1884. I have been President of the Company since February, 1917. Prior to that time I was Vice President and General Manager from February, 1908. Since 1884, I was first the Attorney and later the General Attorney of the Company.

The Southern New England Telephone Company operates telephone exchanges throughout the State of Connecticut. The outstanding capital stock of the Southern New England Telephone Company is Twelve Million Dollars, (\$12,000,000.00), divided into one hundred and twenty thousand (120,000) shares. I know by whom The American Telephone & Telegraph Company the stock is held. is a stockholder in the Southern New England Telephone Company.

39,851 shares of stock in the Southern New England Telephone Company are owned, or held, directly or indirectly, by the American Telephone & Telegraph Company and its asso-789 ciated or allied interests. 33.21 per cent of the outstanding capital stock of the Southern New England Telephone Company is owned. or held, directly or indirectly, by the American Telephone & Telegraph Company and its associated or allied interests.

66.79 per cent of the outstanding capital stock of the Southern New England Telephone Company is owned and held independently of the American Telephone & Telegraph Company and its associated

and allied interests. The American Telephone & Telegraph Company has never owned or held, directly or indirectly, a majority of the outstanding capital stock of the Southern New England Telephone Company.

33.21 per cent is the largest percentage which the American Telephone & Telegraph Company and its associated or allied interests has at any time owned or held, directly or indirectly, in the Southern

New England Telephone Company.

The Southern New England Telephone Company has a board of directors as well as an executive committee. The board of directors. elected annually by the stockholders, controls and directs the affairs of the Southern New England Telephone Company and elects

790 its officers, such as its President, General Manager, and Secretary and Treasurer. The affairs of the Southern New England Telephone Company have been thus directed and controlled and its officers thus selected since its organization, October 2, 1882. There are eleven members on the board of directors of the Southern New England Telephone Company.

The American Telephone & Telegraph Company and its associated or allied interests have two directors on such board, Theodore N. Vail and Harry B. Thayer. The American Telephone & Telegraph Company and its associated or allied interests have never been represented

by more than two directors on the said board in the past.

There are six members of the executive committee of the Southern New England Telephone Company. The American Telephone & Telegraph Company and its associated or allied interests have one member, Harry B. Thayer, on such executive committee. American Telephone & Telegraph Company and its associated or allied interests have never been represented on such executive committee in the past by more than one member. With reference to the extent that the representatives of the American Telephone & Telegraph Company, or its associated or allied interests, have participated in the management and direction of the affairs of the South-

ern New England Telephone Company, of the two directors representing the American Telephone & Telegraph Company one. Theodore N. Vail, has never attended a meeting of the board. The other director generally attends the quarterly meetings of the board of directors, but does not attend the meetings of the executive committee unless the Company management especially requests his

attendance.

The Southern New England Telephone Company pays a portion or per cent of its receipts to the American Telephone & Telegraph Company; it pays 41/2 per cent of its gross receipts to the American Telephone & Telegraph Company. It pays such 4½ per cent of Account 500, subscribers, station revenues; Account 501, public pay station revenues; Account 504, private exchange lines; and Account 510, message tolls, less Account 304, uncollectible operating The account numbers refer to the Interstate Commerce Commission's standard system of accounts for Class A telephone companies.

This payment is made by the Southern New England Telephone

Company in consideration of instruments and services furnished under a contract between the Southern New England Telephone Company and the American Telephone & Telegraph Com-

pany dated November 14, 1918, entitled: "Agreement between American Telephone & Telegraph Company and The Southern New England Telephone Company covering telephones, services, licenses and privileges"; a copy of which is attached to my deposition marked "Moran Exhibit 1," and made a part of this answer. The payment referred to in my answers to the preceding interrogatories, numbers 28 and 29, is the payment made under the contract Moran Exhibit 1. In my judgment the property and services furnished by the American Telephone & Telegraph Company to the Southern New England Telephone Company are worth the amount paid therefor by the Southern New England Telephone Company. The Southern New England Telephone Company continues this arrangement whereby it pays 4½ per cent of such gross receipts to the American Telephone & Telegraph Company because it considers the arrangement of very substantial value to it.

If the Southern New England Telephone Company did not have the said arrangement with the American Telephone & Telegraph Company I would consider it advisable and advantageous for our Company to make such arrangement if the American Telephone &

Telegraph Company were willing to make same.

I am familiar generally with the payments made to the American Telephone & Telegraph Company by its associate and subsidiary operating companies generally for the use and repair of instruments and for American Telephone & Telegraph

Company services. It is my understanding that the payment of the Southern New England Telephone Company constitutes the same percentage of its telephone receipts as is paid by all of the other telephone companies known as the Associated Companies of the Bell

System

I am familiar generally with the property and services furnished by the American Telephone & Telegraph Company to its associate and subsidiary operating companies in consideration of such 4½ per cent payment. So far as my knowledge goes it is my understanding that all of such associated and subsidiary companies receive substantially the same services as are rendered to the Southern New

England Telephone Company.

Q. At the time the arrangement was originally made whereby your company has been receiving the use of such property, and has been receiving such services from the American Telephone & Telegraph Company, what interest in your company was owned or held, directly or indirectly, by the American Telephone & Telegraph Company and its associated or allied interests? If at the time such arrangement was originally made the American Telephone & Tele-

graph Company or its associated or allied interests owned or held directly or indirectly, any interest in the Southern New

England Telephone Company, please explain fully.

A. Up to May 1, 1884, the date when the arrangement was originally made, the American Bell Telephone Company, the pred-

ecessor of the American Telephone & Telegraph Company, held but 43 shares of the capital stock of the Southern New England Telephone Company. Other than these 43 shares of stock neither the American Bell Telephone Company or American Telephone & Telegraph Company held any interest whatsoever in the Southern New England Telephone Company.

Cross-interrogatories:

I attach copies of the Charter and By-Laws of the Southern New

England Telephone Company, marked Moran Exhibit 2.

On January 1, 1920, the Southern New England Telephone Company had 2,306 stockholders, and the number is substantially the same on this date, March 3rd, 1920. The number has probably increased slightly. The American Telephone & Telegraph Company, including its qualifying shares for two directors, five shares each, holds 39,851 shares. 2,031 stockholders are residents of the State of Connecticut, holding in all 72,140 shares. The balance of

8,009 shares is held by 272 stockholders distributed through
29 other states of the United States and two foreign countries.

The total number of shares is 120,000. There are no treasury stock, bonds, or other securities in the treasury of the Southern New England Telephone Company. I have no personal relationship and am not related by blood or marriage to any official or officials in the American Telephone & Telegraph Company, or any of its subsidiaries. I do not know the actual cost to the American Telephone & Telegraph Company of the services rendered us under the contract whereby we pay 4½ per cent of the gross earnings annually to the aforesaid company.

The engineering services we receive from the American Telephone & Telegraph Company are advice and direct assistance in (a) building engineering, including the design and character of central office buildings; (b) equipment engineering, including the standardization of central office and station equipment; (c) plant engineering, including standardization of construction methods, and establishment of protective measures against the interference of foreign currents; (d) traffic engineering, including studies of central office requirements and the standardization of operating practice; (e) commercial engineering, including field development studies for a long

period of years; (f) fundamental engineering, including the determination of fundamental plant requirements from the data established by development studies. I cannot state in detail what patent devices we are permitted to use for our local service which are not open to use by any independent telephone company. The annual report of American Telephone & Telegraph Company issued March 1, 1920, states on Page 28 "The patent holdings of the Bell System have increased fully 12½ per cent during the last year. It now owns or controls or is licensed under more than 5,000 United States letters patent and applications therefor." Under the agreement Moran Exhibit 1 The Southern New England Telephone Company is entitled to a license for the use of all of these patents.

Other services which are rendered under the aforesaid contract are legal advice and assistance. Advice and assistance in regard to taxation, national and state; advice and assistance in matters pertaining to Government regulations, national and state; publicity as advanced by newspaper statements and pamphlets setting forth the policies and purposes of the Bell Telephone System; advertising, as contained in all the leading magazines of the country.

Financing, including direct loans and the underwriting or the liability assumed under the plan for employes' pensions, disability

benefits and insurance.

797 Accounting, including the checking of the company's state-

ments and an annual audit of its books.

And a general security and advantage resulting from the immediate availability of, and daily correspondence with, a comprehensive organization composed of the most expert telephone men in the world.

We have an engineering department. An organization chart of our engineering department is hereto attached marked Moran Exhibit 3 and made a part of this answer. There are 38 employes in our engineering department. The minimum wage is \$572 per annum and the maximum salary is \$6,500 per annum.—that of the

Chief Engineer.

Our Engineers are operating engineers, the engineers of the American Telephone & Telegraph Company are development, research and consulting engineers. I would say that our engineers are practical rather than technical engineers. Our engineering department receives the standards and advice and recommendations of the Engineering Staff of American Telephone & Telegraph Company and applies them to the construction and maintenance of our plant in all its phases. In my judgment our engineers are quite competent to handle the work entrusted to them, but they do find it necessary to invoke continuous aid from the Engineering Staff of American Telephone & Telegraph Company. An example

798 of the differentiation between the work of our engineers and the work of the Engineering Staff of American Telephone & Telegraph Company is the following: About 1906 the New York, New Haven & Hartford Railroad Company decided to change from operation by steam to electrical power. It adopted the so-called single phase alternating current system, installed by the Westinghouse Electric Company. This change was brought to the attention of the Engineering Staff of American Telephone & Telegraph Company and it determined that the operation of this new system in the method originally planned for would result in substantial annihilation of the telephone service within a substantial distance from the right-of-way of the railroad company. At the time the Southern New England Telephone Company was not in a position through its engineering department or otherwise to meet or fight this electrical interference. At that time the New York New Haven & Hartford Railroad Company was strong and powerful. The American Telephone & Telegraph Company took over the full responsibility in the

handling and fighting out of the electrical conflict. A corps of American Telephone & Telegraph Company engineers was put to work upon the problem, and in concert with the experts of the railroad company and of the Westinghouse Company modifications and adjustments were made in the plans for the installation of the electrical transmission whereby the trouble was substantially avoided.

This work has kept up ever since, following the development and enlargement of the railroad and its electrical equipment.

New problems arise in it from time to time and are worked out amicably between the parties involved. The engineering department of the Southern New England Telephone Company has had little or no part in the handling of this important electrical problem. It is occasionally called upon to make practical tests on the lines and apparatus of our company, but its part is only incidental to the main work.

This particular electrical installation was the first of its kind on any railroad in the country, and the problem as met and surmounted in Connecticut is of importance and great value to every telephone plant wherever this form of electrical power transmission has since

been or will hereafter be installed.

We have no legal department. As General Attorney for the company I care for the general legal matters of the business, depending upon the advice and assistance of the Legal Department of American Telephone & Telegraph Company whenever required. I depend upon local attorneys in the different cities and towns of the state to handle our court work such as accident cases. Of my salarly as President and General Attorney, \$3,000.00 is allocated to the General Attorney.

Thus far our Legal Department, such as it is, has proven fairly competent to handle the affairs of the company but finds it necessary to invoke, from time to time, the aid of the Legal Department of American Telephone & Telegraph Company in the

handling of its legal affairs.

The present market value of the Southern New England Tele-

phone Company's outstanding stock is 98 bid, 100 asked.

At the present time the Southern New England Telephone Company is carrying no loans with bankers but has borrowed about a million and a half dollars from American Telephone & Telegraph Company. The company is sound financially fixed and could probably care for its financial requirements without the assistance of American Telephone & Telegraph Company, but could not meet them so easily, so satisfactorily, or economically as it can through its American Telephone & Telegraph Company relation.

By means of this financial relationship with American Telephone & Telegraph Company we are temporarily at least getting money at less than it would cost to obtain it in Connecticut from bankers or otherwise, and, as I understand the facts, at less than it costs the

American Telephone & Telegraph Company.

The Southern New England Telephone Company for its own corporate and administrative purposes makes up monthly various reports on the standard forms furnished by American Telephone & Telegraph Company and used by all of the Associated Com-

panies of the Bell System. Copies of these reports are furnished by

our company to American Telephone & Telegraph Company.

Reports of one kind and another are furnished practically every business day of the year to American Telephone & Telegraph Company, and time would not permit to make and attach copies of them. A set of 32 report forms prepared monthly and of which copies are furnished American Telephone & Telegraph Company by our company is hereto attached marked Moran Exhibit 4. A copy of the annual report of the Southern New England Telephone Company for the year ending December 31, 1919, is attached marked Moran Exhibit 5.

I have given depositions on telephone rate cases in behalf of American Telephone & Telegraph Company, or its subsidiaries prior to this one. I gave a deposition on the 5th day of October, 1918, in the case of the Southwestern Telegraph & Telephone Company vs. City of Ft. Worth, et al., in the United States District Court for

the Northern District of Texas—Ft. Worth Division. The original deposition is, I assume, on file in the United States District Court for the Northern District of Texas, Ft. Worth

Division.

I have testified in a rate case or valuation case in behalf of the American Telegraph & Telephone Company or its subsidiaries. first testified in 1914 before the Public Service Commission of the State of Vermont. June 17, 1915, at Milwaukee, Wisconsin, I testified before the Railroad Commission of Wisconsin; In re "Bogart et al. versus Wisconsin Telephone Company, and City of Milwaukee vs. Wisconsin Telephone Company." In December, 1916, I testified before the Public Utilities Commission of the State of Illinois in the case known as the City of Peoria Rate Case. June 15, 1917, I testified at Montgomery, Alabama, before the Pub-lic Service Commission of the State of Alabama in the case of City of Birmingham, Alabama, vs. Southern Bell Telegraph & Telephone Company. In November, 1917, I testified at Jefferson City, Missouri, before the Public Service Commission of the State of Missouri "In the matter of the application of the Southwestern Bell Telephone Company for an order permitting increase and change of certain classification of rates and charges in the St. Louis Exchange, and fixing the value of all exchange property.'

Q. Have you ever attended meetings or conferences of the American Telegraph & Telephone Company or any of its subsidiaries in New York or elsewhere concerning rate cases or concerning the attempt to uphold the annual payment of 4½ per cent of gross revenues? If yea, state when, where and give the total number of times that you have attended any such meetings

since January 1, 1917?

A. I have attended no such meeting or conference and have no knowledge that any such meeting or conference was ever held.

I studied law and was graduated from the Law Department of Yale University in 1884 and took a graduate course, receiving the degree of Master of Laws in 1885.

With reference to my practical experience in the construction and

operation of telephone systems, in September, 1884, I entered the law office of the then President of the Southern New England Telephone Company. I at once took up the incidental law work of the telephone company, attending to collections, handling right-of-way matters and all general telephone matters requiring legal attention. In this way I became familiar with the general details of the telephone business and, in fact, grew up with it. In the course of time I acquired the title of General Attorney. In 1907 I became a director of the Company. In 1908 I was elected Vice Presi-

804 dent, and in 1911, in addition to my duties as Vice President, became General Manager of the Company. In February, 1917, I was elected President of the Company, throughout my retionship serving as attorney or general attorney in addition to my other functions. I am now President and General Attorney of the company.

The Southern New England Telephone Company is not a member of the U. S. Independent Telephone Association. I do not know of any advantage to be gained by such membership.

The Southern New England Telephone Company has purchased apparatus, appliances, and materials from companies outside of those affiliated with the American Telephone & Telegraph Company. The Southern New England Telephone Company are purchasing and always has purchased all of its telephone poles from the farmers about the state of Connecticut. It purchases all of its automobiles through local automobile dealers about the state of Connecticut. It also purchases locally much of its incidental supplies from local stores in its territory. I am unable to give the approximate amount of such purchases.

Neither I nor the Southern New England Telephone Company have ever made any tests to determine the relative merits of the American Telegraph & Telephone Company, or so-called Bell Company's instruments, and those manufactured by other com-

805 The instruments and apparatus furnished by the panies. American Telephone & Telegraph Company have been accepted as standard telephone apparatus the world over for years. The first commercially operated telephone exchange in the the world was opened in New Haven, Connecticut, January 28, 1878. The only telephone apparatus then existing and available was that of the American Bell Telephone Company, the predecessor of the The Southern New American Telephone & Telegraph Company. England Telephone Company and its predecessor, the New Haven District Telephone Exchange Company has continuously since January 28, 1878, used the instruments and apparatus of the American Bell Telephone Company and American Telephone & Telegraph Company. Whenever improvements in instruments were made new instruments with such improvements were from time to time supplied our company, and the relationship has throughout its history worked to the entire satisfaction of the Southern New England Telephone Company and it has considered its interests best served by the maintenance of this relationship.

I have never been connected with a telephone company that is

or was a strictly independent company, or in which the American Telegraph & Telephone Company or any of its subsidiary companies

owned no securities, and had interest.

806 I am without any information as to any strictly independent company which has ever made a contract to pay 4½ per cent of its gross income to the American Telegraph & Tele-Company.

I never attended a meeting or conference of the U.S. Independent

Telephone Association.

Q. Is it your opinion that you are regarded by any operator of an independent telephone company as being the head of a really independent telephone company? If yea, state who the actual independent operators might be who have ever indicated any such belief on their part?

A. I have no opinion or knowledge on the subject.

Q. Is your Company recognized generally among owners and operators of so-called independent companies as an independent company?

A. I have no knowledge as to this point.

It is a fact that the American Telegraph & Telephone Company owns thirty per cent of the stock in the Southern New England Telephone Company; the amount of stock they own is 33.21 per cent.

Q. Outside such operators as the one that operates at Cincinnati,
Ohio, and one that operates at Waco, Texas, what other independent companies that you know of have a contract to
pay 4½ per cent of its gross income to the American Telegraph & Telephone Company?

A. I do not know of such other companies. In fact I know

nothing about the company that operates at Waco, Texas.

I do not know about the Cincinnati and Suburban Telephone It is not my understanding that the Cincinnati & Suburban Telephone Company is directly owned by American Telephone & Telegraph Company. It is my understanding, and I think I am accurate as to the facts, that the relationship of the Cineinnati & Suburban Telephone Company to American Telephone & Telegraph Company is substantially the same as that of our company, the Southern New England Telephone Company, to American Telephone & Telegraph Company. It is my understanding that American Telephone & Telegraph Company owns about thirty per cent of the Cincinnati & Suburban Telephone Company. well acquainted with the President of the Cincinnati & Suburban Telephone Company and it has always been my understanding that he, his family, and local Cincinnati people own a substantial control of the company. I have given my full, general knowledge on the subject.

808 A. E. Scott, a witness for plaintiff, testified as follows:

Direct examination.

Questions by Mr. J. D. Frank:

Q. I will ask you whether or not you have prepared a statement of the stockholders, directors and officers of the Southwestern Telegraph & Telephone Company?

A. Yes, sir.

Q. As of the date November 1st, 1919?

A. Yes, sir, I have prepared such a statement.

Mr. Frank: We desire to introduce that as Plaintiff's Exhibit No. 5.

(The document was thereupon received in evidence and marked Plaintiff's Exhibit No. 5, as requested.)

Q. What does this statement show as to who are the stockholders

of the Southwestern Telegraph & Telephone Company?

A. It shows the American Telephone & Telegraph Co. owns 349, 979 shares. Royal A. Ferris, of Dallas, Texas, owns 1 share. W. S. Gifford, of New York, owns 5 shares. Theodore N. Vail, 3 shares, H. J. Pettingill, St. Louis, owns 5 shares. E. D. Nims, St. Louis, owns 5 shares.

809 Q. In all there are 350,000 shares of stock?

A. Yes, sir.

Q. And the American Telephone & Telegraph Co. owns all but 21 shares of the stock?

A. Yes, sir.

Q. What part in the telephone business in the United States does

this American Telephone & Telegraph Company play?

A. The American Telephone & Telegraph Company is what we know as the parent company. It controls all the companies comprising the Bell Telephone System throughout the United States.

Q. According to this statement when did the American Company acquire a controlling interest in the stock of the Southwestern Tele-

graph & Telephone Company?

A. In 1902, when they owned all but \$3,600 worth.

Q. So in that year the American Telegraph & Telephone Co. became the owner of 99.95 per cent of the entire stock of the Southwestern Telegraph & Telephone Company?

A. Yes, sir.

810 H. Blair-Smith was called as a witness by the complainant and, after being duly sworn, testified as follows:

Direct examination

Questions by Mr. J. D. Frank:

My name is H. Blair-Smith; my home is in Englewood, New Jersey, and my place of business is 195 Broadway, New York City. I am Assistant Comptroller of the American Telephone and Telegraph Company. I have been connected with the company for about eight years. During the period of my connection I have been general auditor, acting comptroller,—well, let's see—assistant comptroller when I first went there, then general auditor, then acting comptroller, then assistant comptroller, and I am still assistant comptroller. The comptroller at the present time is Mr. W. S. Gifford; he is the vice-president and comptroller. Mr. Gifford, in his position as comptroller is in charge of the accounts of the American Telephone and Telegraph Company and of the accounting function of the General Staff for the Associated Companies, also of the statistical work of the General Staff.

My direct duties as Assistant Comptroller, are in connection with the corporation, the American Telephone and Telegraph Company; the books of the corporation are kept, and the employees doing so are under my control. I also deal with the finances, the loans to the

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Associated Companies, the purchase of notes, securities, and matters of that nature. I am in charge of my department.

I have been in charge of the whole of the comptroller's department during the period of time when the comptroller was Mr. Charles G. Dubois and went to Washington as comptroller of the American Red Cross. I was appointed acting comptroller during his absence which was during a period of about seven months.

I have had experience as an accountant during a period of 26 years. In 1894 I began; I began with the Cumberland Telephone and Telegraph Company whose headquarters were at Nashville, Tennessee. I was a clerk, and I worked up until I became general cashier and was finally made auditor of that company. The auditor of that company was in charge of all of the accounting of the company. The company at that time operated throughout the states of Kentucky, Tennessee, Mississippi and Louisiana. In 1912, after I had been there 18 years, the American Telephone and Telegraph Company became—acquired practically all of the stock of that company and changed its offices, headquarters to Atlanta, Georgia. I then transferred to New York, becoming assistant comptroller for the American Telephone and Telegraph Company. Since 1894 I have been engaged continuously in accounting and financial work in the Bell system.

I have a chart here showing the organization of the American Telephone and Telegraph Company down to a certain point. It does not undertake to show in detail the number of employes and

the specific employes below those reporting to a vice president or close to a vice president.

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit Number 136.

(The chart was thereupon received in evidence, marked "Plaintiff's Exhibit No. 136, witness Blair-Smith," and is filed herewith.)

Q. Now, prior to the present system of accounting what method of accounting was used in the Bell System? Well, first, what method of accounting is now used by the Bell System?

A. Well, the circular of accounts at the present time in use is a circular based on a circular issued by the Interstate Commerce Commission for telephone companies, Class A and Class B telephone companies,-our Associated Companies class As "Class A" telephone companies. The telephone companies are classified according to the gross revenues and those that have \$250,000 a year or more of gross revenues are called "Class A" companies. The Circular of Accounts now in use is known by us as "Class A" accounting circular No. 8. which is a more elaborate circular, more explicit, than that issued by the Commission; that is, the Commission may prescribe that certain items shall be charged to a specific account; if our company that puts into effect the circular is a very large company it may wish to subdivide that particular account into two or three subdivisions, and our circular makes a uniform division easy in the subdivision and yet maintain the integrity of what we call the primary account.

Q. In other words, the Interstate Commerce Commission 813 doesn't go into details in -etting out these things so you know

just exactly how to subdivide all of your accounts?

A. It gives us mainly the theory of the account and we go into

the details more elaborately than they do.

Q. Now, coming back to the question which I asked you, what method of accounting was in use with the Bell system prior to the time the Interstate Commerce Commission prescribed the uniform

system of accounting?

A. Well, if we go back to 1882 or '03, there was a circular issued at that time for the companies then licensees of the American Bell Telephone Company, and from time to time there were new circulars of accounts issued—in all some three or four complete circulars, and down to 1909—1907—those circulars had seemed to fill the bill.

Q. Did all of the Associate Companies in the Bell system employ the same method of accounting prior to the time the Interstate Com-

merce Commission prescribed this system?

A. They had the same system of accounts, but no two companies charged the same items to the same accounts. I mean the accounts were not clearly enough defined, nor were they scientific enough down to 1907 or '08; they were scientific anough to that time, but the business developed so large and became a national project that it was found necessary to formulate a new circular of accounts which would come nearer to covering the requirements of the day. Accounting, just as all other sciences, has grown, and grown very rapidly, and the necessities of accounts have been found to be much greater with the great businesses.

Q. Now, were the accounting methods and systems standardized?

A. There has been an attempt at standardization since the beginning but it has never been carried out as completely as

it is at present,—at the present day. I might say that the first great effort that was made towards standardization was that which was formulated in Accounting Circular that we knew as "Ascounting Circular No. 6."

Q. By whom was this work affecting the standardization under-

taken?

A. Mr. Charles G. Du Bois started that when he first came into the system in 1907.

Q. You are speaking of the Bell system?

A. Yes. He came into the American Telephone and Telegraph Company in 1907 and he organized a department for the framing of that circular. That circular was worked on by a number of the best telephone accountants that we could command, and in conjunction with the general auditors of the Bell system, and after two or three years it was developed to the point where it was printed and issued. That was about 1909; then we worked under that system until 1912 when a new circular embracing all the changes made in the meantime was issued as of January first, 1912. Then the Interstate Commerce Commission, in conformity with the law giving them jurisdiction over telephone accounts, undertook to go into the subject more They appointed their accountants and they called thououghly. upon us for assistance in connection with the problem, and through a period of two or possible three years these accountants worked in conjunction with the others, ours, from a practical standpoint, theirs from a theoretical standpoint, and the result of that work is "Accounting Circular No. 8," called the "Interstate Commerce Commission Circular." The two are the same, fundamentally, but

ours is elaborated more than theirs. 815

Q. Now, at the time the Interstate Commerce Commission acquired jurisdiction over telephone companies and prescribed this uniform system of accounts, were all Associated Companies using the same method of accounting?

A. They were.

Q. How long had they been using the same system of accounting?

A. They had been using that for three or four years. Q. Where did they get this uniform system of accounting?

A. From the General Staff of the American Telephone and Tele-

graph Company.

Q. Now, does this uniform system of accounting prescribed by the Interstate Commerce Commission apply to all telephone companies in the United States, or is it applicable only to the Bell Telephone

Company?

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- A. It is applicable to all companies, but, as I say, the companies are classified. They are classified into classes A, B, and C, according to their gross revenues. The companies that are classified as "Class A" follow one accounting circular, those classified as "B" are allowed to concentrate some of the details into a simpler system of accounts and those classified as "C" have an entirely separate circular of accounts.
- Q. As to the three classes of circulars, are they practically the same?
- A. Well, otherwise they are pretty much the same, but in actual practice "C" is not as scientific and not as theoretical as the othersthe circulars "C" for class- "A" and "B."

Q. I believe you have explained how they grade.

A. "A" is a telephone company having telephone revenues in excess of \$250.00; "B" is between \$50,000 and \$250,000, and "C" is below \$50,000, a year. I think that is the classification, ap-

proximately.

Q. What is the fact with reference as to whether or not your "B" department is connected with or a member of the General staff of the American Telephone and Telegraph Company?

A. The accounting department is one of the departments of the

General Staff.

Q. Now, you say this General Staff worked with the Interstate Commerce Commission in prescribing this uniform system of ac-

counts?

A. In formulating a uniform system of accounts, the Bell telephone system with the Interstate Commerce Commission was undertaken by the American Telephone and Telegraph Company, thereby relieving the general auditors of the Associated Companies of the Necessity of devoting their time and saving the expense of coming to Washington. The American Company carried on all the business.

Q. Then the associated Companies were relieved of that?

A. They were; they placed their interests with the American Company.

Q. Do you know how the railroads of the United States handle this

matter?

A. Briefly, I do. They had what is called an "Accounting Committee" which is made up—

Mr. Howard: What have the railroad companies got to do with this?

Mr. J. D. Frank: It's very material.

817 (By Mr. J. D. Frank:)

Q. All right; go ahead, Mr. Blair-Smith.

A. The Railroads had what they call an "Accounting Committee," and their committee was made up of the chief accounting officers generally, I think, of the railroads able to have themselves represented. That committee has an organization of its own, and all accounting problems and matters relating to the accounting that is to come to all of the railroads are taken up by this committee with the Interstate Commerce Commissions, that is, the committees for the railroads, in negotiating with the Interstate Commerce Commission.

Q. Now, the railroads have had to continue that organization to

this time?

A. I understand that's in existence now and has been right along.

Q. Now, when the Interstate Commerce Commission prescribed its system of accounting regulations was it issued in such form and with such sufficient particularity so as to enable all telephone companies to thoroughly comprehend what was desired on the part of the telephone companies.

A. I think the Circular of Accounts is clear, but it was not in the form that was required by the companies of the Bell system. I might say as a parallel case that the circular issued in connection with railroads has been adjusted by railroad for its own purposes just

as Class "A" telephone companies have adjusted it for their pur-

poses,-to fit their own uses.

Q. Did the General Staff of the American Telephone and Telegraph Company do any work for the Associated Companies in connection with this accounting matter after the Interstate Commerce

Commission had issued its regulations?

A. Yes; the General Staff issued Circular No. 8 which more clearly—in fact it does meet the needs better than the Interstate Commerce Commission circular. In addition to that the General staff undertook to explain the charges that were made between Circular No. 8 and Circular No. 6 to show the relationship of the two, and, in fact, to analyze the difference so that the Accounts that were kept for the four or five years under Circular 6 could be compared with the accounts that were kept and would be produced through the use of Circular 8; that is, the accounting date for the period of time it was kept under Circular 6, so that it would not be thrown away but could be utilized to make comparisons with it after development.

Q. Have you a copy of that Circular No. 8, Mr. Blair-Smith?

A. Yes.

Mr. J. D. Frank: We sould like to offer that in evidence as plaintiff's exhibit No. 137.

(The circular was thereupon received in evidence, marked "Plaintiff's Exhibit No. 137, Witness Blair-Smith," and is filed herewith.)

(By Mr. J. D. Frank:)

Q. Now, did the issuance of Circular No. 8 and its work in con-

nection with this Accounting work?

A. By no means. It is necessary to keep the system alive and to keep in touch with the changes that are going on, and at all times; also to interpret the meaning of the Circular. It is advisable as long as you have a circular of accounts and are working under it to make as few changes as possible to get along with until you under-

819 take to revise it completely, and then the work of making comparisons is made easier when you do change; that is, after you once get a system of accounts in you want that system to last so that the results you get year by year are comparable, and Circular No. 8 has not been revised readically, But it is necessary, just as under the Constitution of the United States to Interpret what it means, and in order to interpret it it is necessary to have accounting conferences with the accountants of the Interstate Commerce Commission. Associated Companies, from time to time, propound questions and they are sent to the American Telephone and Telegraph Company, and at the time that the work was most actively under way there was an accounting committee composed of two representatives of the Bell System and two representatives of other telephone companies. They were known as the Accounting Committee of the American Telephone Companies, and conferences were held whenever questionhad accumulated, and there again they ruled or decided what answer should be made from a practical standpoint, and then we had conferences with the accountants of the commission, and I think in all instances they approved of the answers that were given to the questions propounded.

Q. Now, did you have a great many of those conferences?

A. I think there have been more than forty conferences since the circular w-s issued.

Q. And the American Telephone and Telegraph Company has represented the Associated Companies in that matter?

A. That's true.

Q. Mr. Blair-Smith, did you intrude yourself on the Interstate Commerce Commission when this law went into effect and go to them and tell them that you had the best system of accounting that they could adopt, or did they come to you and

ask your assistance in the matter?

A. The Bell system is of course the representative telephone system in the United States, and the Commission was perfectly aware—the fact that they must have some practical knowledge of the operation of the system and the Commission has sought the assistance of the American Telephone and Telegraph Company, which, of course, was readily and gladly loaned. The co-operation was mutually acceptable, but we did not in any way thrust ourselves upon them.

Q. Well, in the matter of the revision of these rules, and interpretation of the rules of the Interstate Commerce Commission, have a

great many of those questions arisen?

A. I have Accounting Circular No. 12 which publishes 189 questions and answers that were raised by the Associated Companies and were answered in the manner that I have i-dicated.

Mr. J. D. Frank: We offer that in evidence as plaintiff's exhibit No. 138.

(The circular was thereupon received in evidence, marked "Plaintiff's Exhibit No. 138, Witness Blair-Smith," and is filed herewith.)

(By Mr. J. D. Frank:)

Q. Now, where any of these questions arise in the field or in the territory of the Associated Companies they refer them to the American Telephone and Telegraph Company and the American Telephone and Telegraph Company gets the matter straightened out with the Interstate Commerce Commission?

A. If it requires a ruling by the Commission it does, and when it secures that ruling it distributes it to all of the companies of the system, and when we have accumulated a sufficient amount for printing they are then issued in the form of a printed circular for distribution to the Associated Companies and are indexed in different ways with reference to the printed answers and questions repeatedly found.

Q. Is it necessary to secure the consent of the accountants of the

Interstate Commerce Commission in order to make a change in the system?

A. Well, the circular itself cannot be revised without action of the Commission itself; the accountants haven't the authority to revise the circular.

Q. You put the matter up to the accountants and then the Inter-

state Commerce Commission-

A. (Interrupting.) No; for an interpretation we go to the accountants, but if there is a change in the system the Commission it-There have been very few changes made in the circular.

Q. Well, now, when these questions arise are they carefully worked

out?

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A. They are worked out with a great deal of care, and it is necessary to have very practical experienced telephone accountants to work The Commission has always acknowledged the fact that it was necessary in all undertakings of accounting questions to get the opinion of practical telephone people; those that are doing the work-those that are on the job.

Q. Will you take the exhibits and mention one or two questions that have arisen and tell us something about how they are worked

822 A. Well, here is question 27 as an instance: (Reading from circular:) "Question. Section 9 of the General Instructions, Accounting Circular No. 8 provides that all property having an expected life of more than one year (except small tools) shall be charged to fixed capital. There are other items of small value, which, while having an expectation of life of more than one year, are difficult to keep record of and are likely to be lost. May such items be charged directly to operating expenses?" "Answer. Individual items of small value (e. g., amount to less than \$5) classable as general equipment under Accounts 261 to 265, even though having an expectancy of life of more than one year, may be charged direct to the operating expense accounts or through the clearing accounts." You see the circular is pretty rigid as to what shall be charged to construction or capital accounts, or what shall be charged to operating accounts; that is, maintenance, commissions, and so forth, and it was necessary to get some relaxation for if these small items were charged to construction account or capital account it would be necessary to take an inventory from time to time and when they were found missing to trace them down, and it may not be worth all the work necessary to trace them and so we were permitted to charge them to capital accounts upon purchase or upon being issued.

Q. Why was there any doubt about that question mentioned there?
A. Because under the requirements, under the circular itself, which stated that tools having a life of one year or more must be charged to capital account. Now, then, they amended that to the extent of permitting tools having a small value or a life even more

than a year to be charged to expense.

Q. Well, now, the rules are enforced by the Interstate Commerce Commission, are they?

A. The rules are enforced. The law requires the telephone com-

panies under penalty to conform to the requirements, and if we depart in any way from the requirements it must be done in a lawful way, or the requirements must be changed.

Q. The Interstate Commerce Commission have representatives who inspect the books from time to time to see whether or not the

law is being complied with?

A. They have examiners, and one never knows just when they will come and make an inspection.

Q. They are just like a bank examiner, and are liable to drop in at most any unexpected time?

A. Yes.
Q. Does the Interstate Commerce Commission require any reports

of any kind from Associated Companies?

A. There is a monthly report of revenues, expenses, taxes, additions to capital, required from each company, and then there is an annual report which is in considerable detail required from all interstate companies,

Q. What, if anything, has the General Staff had to do in the

matter of these reports?

A. The Interstate Commerce Commission accountants have sought our assistance in formulating most of the reports. The monthly report is rather a simple affair, but it is brief and at the same time indicates what the company is doing in the nature of operating revenues and operating expenses. The annual report is a report as I say in considerable detail. It requires some-

thing of a drag-net; it goes through every account and makes you explain the account and if there is anything unusual to

give it in detail. You must give all the holdings of the corporation, you must give the directors, you must give the largest stockholders, you must give the operating revenues, you must give the operating expenses, you must give the reserve accounts, the construction accounts in detail, the capital issues in detail, showing what you have got from the sale of your stock, what you have got from the sale of your notes, bonds, and what transactions you have had in those during each year. What new securities you have purchased, if any, in fact a drag-net which undertakes to take a history of the transactions,—the operation for the year in question. They have even asked for the number of accidents, the classification of accidents, the period of time that the employe is off duty, and they ask for a classification of employes by occupations and by wages.

Q. Well, now, have the General Staff done anything in the matter of assisting the Associated Companies in making up these reports or tabulating the reports which are satisfactory to the Interstate Com-

merce Commission?

A. They have. I might go back just a little into the details. The first report, I think, was for the year 1914; it was quite an elaborate affair. When we got into the war the report for 1916 was due and it was considered what they would require; the Commission realized the fact that it would not be fair to the companies to attempt to have so elaborate a report while the companies were losing their

employes on account of war service and other duties, and so they asked our assistance in condensing the requirements of the report, and so it was made less elaborate. That report, I think, has he-d good down to the present time, with this slight modification, from year to year.

Q. Does the Interstate Commerce Commission have any rules

with reference to destruction of records?

A. The Interstate Commerce Commission required the Company to furnish schedules of their employes classified by occupations and wages. The American Telephone and Telegraph Company realizing that was a job that could be done by machines better than otherwise made a suggestion to the Associated Companies that they send simply copies of their payrolls which are always made with machines,—addressographs—to the general office and there we would keep a card for each employe of the system; that card would give all of the required indoemation necessary to make the answers to the Interstate Commerce Commission, and by the use of sorting machines and computing machines we prepared all of the information for each Associated Company, and we do that regularly.

(By Mr. Duls:)

Q. Do you mean, Mr. Blair-Smith, that the machine picks out the card?

A. The machine picks out the card wanted under the various classifications.

Mr. Howard: We have heard all about that.

(By Mr. Duls:)

Q. Was that an invention of the General Staff?

A. No. sir.

(By Mr. J. D. Frank:)

Q. Mr. Blair-Smith, have you an exhibit with reference to that matter of classifying employes?

A. Yes,—Accounting Bulletin 108-A, called "Standard Occupational Classification of Telephone Employes," is issued for the Bell system by the American Telephone and Telegraph Company.

Mr. J. D. Frank: We offer that as plaintiff's exhibit No. 139.

(The Bulletin was thereupon received in evidence, marked "Plaintiff's Exhibit No. 139, Witness Blair-Smith," and is filed herewith.)

A. And it is the classification of all the employes, showing titles and the nature of work done by the employes grouped under each title. You realize that the Bell system has over 200,000 employes, and if we are to have any uniformity of detail or statistics affecting the employes it is necessary to classify them and that they be given

their definitions very clearly so that all classifications will be con-

Q. Well, now, coming back to the other matter about the destruction of records; does that affect the accounting department in any

way?

A. Of course, with a business as large as ours, where we have hundreds of thousands of transactions a day, there is a great accumulation of records that are of no value after a short period of time. The Federal Law requires that no records of any kind of corporations under the jurisdiction of the Interstate Commerce Commission shall be destroyed without the consent of the Commission. have been two issues of a circular authorizing the destruction of the retention of the records of telephone companies, both of which were worked out by the Interstate Commerce Commission accounts as-

sisted by the General Staff,-employes of the General Staff. The latest one has just been issued and we think it is very 827 much superior to the original and will be a great relief to the Associated Companies, giving them a good deal of authority over records that can be of no possible value to public authorities.

Q. Now, have you rendered any service to the Associated Com-

panies in the matter of a census of employes?

Q. Now, have you rendered any service to the Associated Companies in the matter of a census of employes?

A. Censuses of employes are usually taken once a year or every

two years.

Q. Why do they take those censuses? A. They are used for quite a number They are used for quite a number of reasons. One is that we must report these certain facts in connection with employes to the Interstate Commerce Commission; second, we have a Benefit Plan, benefit scheme which requires statistics for its proper demonstration. In the first place, saw that he can show the corporation where it stands in relation to the employees on account of the benefit system, whether it has reserves sufficient to protect them. reasons, such as the relation of sickness to the member of employees, the relation of accidents to employees, the knowledge as to whether your force is staying with you, that is, the period of service, the average period of service of your operators, the average period of service of your plant men, and furthermore, your average wages to see if we are treating our employees fairly in different sections of the country in the matter of wages, and, of course, if the period of service is greater in some sections than others there must be some-

thing wrong in the sections where your employees won't stay 828 with you. It is very necessary for the proper administration and in fairness to the employees themselves to have these

censuses taken from time to time.

Q. Now, what assistance has the General Staff rendered the Asso-

ciated Companies in these matters?

A. In the taking of the censuses it can be done by one corporation better than it can be done by each for itself, and with the use of these voting machines and tabulating machines we are able to relieve the Associate Company of an organization to do that for themselves, upon their furnishing us the information, which can easily be done with a list of their employees and certain facts in connection with the records.

Q. You mentioned a few minutes ago the Benefit Plan,—the Southwestern Telegraph & Telephone Company has what is known

as an Employees' Benefit Plan, has it not?

A. It has.

Q. Did the American Telephone & Telegraph Company have anything to do with it with reference to the organization of that plan?

A. The American Telephone & Telegraph Company's employees or officials spent considerable time in devising the plan in conjunction with a number of meetings with representatives of the Associated Companies, and a plan uniform throughout the whole system was adopted. The effort is to give protection to an employee, no matter what company of the Bell System he works for. If he transfers from one company to another, we want him to have exantly the same protection in every company, and it is necessary, on that account, to have a uniform plan and to see that the plan is administered in a uniform manner.

Q. Now, the longer an employee is working for the Company, the more benefit he gets in case of sickness, accident, death, and

829 things of that kind?

A. Yes, sickness is graded on the period of service and up to a certain point after an employee has been with the Company five years he gets the maximum; and as to death, that's on the basis of service, and as to pensions, that's entirely on the basis of service and pay.

Q. How about accidents?

A. Accidents,-no.

Mr. Howard: What has that go- to do with this proposition?

Mr. J. D. Frank: I am just showing one of the benefits the Southwestern Company received from the American Telegraph & Telephone Company. If you concede this is justified, I will not—

Mr. Howard: I won't concede anything.

Q. Now, if an employee has been working for one particular Company for five or ten years, and then goes to work for some other Company in some other State, his period of service remains unbroken?

A. If he clings to the Bell system.

Q. Now, what work, if any, has been done by the General Staff of the American Telephone & Telegraph Company in the matter of Federal Income, State Capital Stock Tax, Income and other taxes?

A. The General Staff has a specialist who is in close touch with the authorities in Washington, and who is prepared to take up any questions that the Associated Companies may have in connection with this; given advice about the method of valuation

for the purpose of Capital Stock Tax returns, and for the Income Tax it is necessary for each corporation, under the present law, to send its Income Tax return to a central place, and there a single

return is made for the whole system. The law requires, I think, where there is control of the company, that that company must be treated as a system corporation, and all these tax returns come into the American Company and there are combined into one return. I am told that the return that was made by the American Telephone & Telegraph Company in 1918 had more corporations in it than any other return sent to Washington.

Q. Then, in connection with matters handled in Washington instead of the Associated Companies having to send representatives up there, the American Telephone & Telegraph Company represents

them in those matters,-is that true?

A. That's right.

Q. The American Telephone & Telegraph Company does that at its own expense and without extra charge to the Associated Company?

A. That's true.

Q. Is there any distinction between the accounting regulations issued by the Interstate Commerce Commission and those included

in your Circular No. 8, in the accounting methods?

A. The accounting methods is a difference thing from accounting requirements. Accounting methods cover the method,—the way you get at the results,—the routine that you must go through in order to ecure the results. For instance, you may be required to charge the labor of employees engaged in construction work to

Construction Accounts, but the method of finding out and 831 having that employee's report from day to day what he does, so that you will know whether he is engaged in construction work or maintenance, is the method by which you get at

the facts.

Q. Well, has the Interstate Commerce Commission designed any system of giving the Telephone Company anything in the matter of accounting methods?

A. It has not.

Q. Has the General Staff done anything along that line? If so, what?

A. The General Staff has devised what is called Accounting Bulletins which deal with methods for achieving the various functions of the Accounting Department. To make it clear, I might illustrate in this way; we, of course, must keep accounts with telephone sub-I suppose, before any effort was made at systemization, that every telephone company had a difference method of keeping its accounts with each subscriber. The American Company employed specialists, and it is a very difficult matter to get men who thoroughly understand methods and returns as applied to a unionwide system, to get these men to go though the methods followed by each of the companies, to pick out the best or devise something still better, and to make what is known as a standard method. These standard methods have been offered to the Associated Companies; some fifty different circulars have been issued and these methods have been offered to the Associated Companies and they have been accepted as being superior to what was in existence before.

Q. Well, is there any assistance rendered besides this matter of revenue accounting in connection with bills?

A. We have issued method routines in connection with every important obligation of the Associated Companies, such

832 as accounting for station equipment estimate forms, and records for their provision, estimate or budget for each year, and methods by which they are to get together on programs of work for the year and determine what it is going to cost them and where they are going to get the money. The vouchers,-in connection with vouchers which are issued for all expenditures, the method of handling detail distribution of the vouchers; methods for the handling of employees' working funds, which are advanced in order to enable them to pay their expenses in the field. All together, there are some fifty forms issued in connection with this to make accounting as simple as it is possible to make it. There are several Hundred. It ought to be explained,-when you get all these together and talk about it, it sounds very complicated, but then you will find that the employees only deal with a few of them. A man in the plant department has his routines; an employee in the commercial department has his routines; a man in the operating department has his routines, and they all understand the routines thoroughly and there are very few that touch each man.

Q. Now, do you ever send out any men from your department to

assist the Associated Companies in accounting matters?

A. We do when they are required. We send them usually to the general headquarters, and these men are traveling around generally most of the time. I might illustrate by this,—that we sent, some time since, several men to the the headquarters of this Company at St. Louis; they were to make a study of keeping subscribers station ac-

counts. At the time that they went there they found out what it was costing for each station, and after the system that was adopted, which is covered by the routine that I have

spoken of,—after that was adopted and put into effect it was found that the cost of keeping each account per month was reduced by more than 3 cents, that is, the cost was reduced more than 36 cents per station per year. That is only issustrative of what it means to get the best that can be devised, rather than taking something that seems to fit.

Q. Now, does the General Staff render any assistance to the Associated Companies, including the Southwestern Company, in the mat-

ter of annual audits of its books?

A. The General Staff has a force of about twenty traveling auditors; These men are experienced telephone men, selected because of their experience in auditing and of the nature of the business, and the accounts of every Bell Company are audited annually.

Q. Now, do those men make the audits, or simply assist the local

accountant to make the audits?

A. Those men have nothing to do with the local accountants; they simply see that the general officers of the Associated Company follow the regulations of the Interstate Commerce Commission, that

is, check them for honesty of handling funds and honesty of accounting, and see that their local requirements have been carried out.

Q. How often are those audits made?

A. Once a Year.

Q. Why is it necessary to have these audits, Mr. Blair-Smith?

A. I think that is self-evident. I believe every business of any size that is well conducted has independent accountants to come and audit its affairs every year,—it is customary.

Q. Do they usually have that done by someone else, or by 834

someone within the organization?

A. That's done by an independent organization or individual not employed by the corporation that is being audited,-they are not subject to the jurisdiction of those whom they are auditing.

Q. Now, that service is performed by the General Staff under this

license contract, is it?

A. It is, without additional charge to the Associated Companies.

Q. Has the General Staff a Statistical Department?

Q. Explain just what that Department does.

The Statistical Department is really the Statistical Department of the telephone business. It acts on very broad lines,-for instance, that Department keeps in touch with the development of the telephone undustry all over the world. They have something like eleven hundred titles, which include reports issued by foreign governments in regard to telephone affairs. In addition to that, the Statistical Department has a kind of library a business library of some seven thousand titles. The Statistical Department is engaged in making comparisons of units between the cost of operation of each of the Associated Companies. It prepares schedules which are sent to the operating officials and enables them to see how well they do their job. The Statistical Department is the one which handles the facts regarding all cases of accident, all cases of sickness among employees of the Bell System, with the effort of cutting out accidents, publishing those various kinds that are similar, so

that studies may be made to eliminate that kind of accident. Also with a view of determining whether or not there is any 835

particular kind of desease that is affecting telephone em-There never has been found what is termed an "occupational disease", but they keep their hand right on it so that the doctors at the head office may advise some method by which the different diseases can be prevented. The Statistical Department also publishes each month what is known as Business Conditions Report. It is necessary, in a great business of this kind, to look ahead as far as you can and study your methods of financing and study what financing is going on outside, and this Business Conditions Report deals with the Conditions of the markets throughout the United States,-the steel industry and copper industry. Of course, we have to buy great quantities of steel and copper and other materials, and it is with the idea of determining, if possible, when to buy them and what should be paid for them, -whether the tendence is up or downward. Also watching closely the progress

of the business itself and the conditions of the telephone business itself. They make these studies in connectio- with employee censuses: the Federal Government each five years makes a telephone census of the United States. The representatives of the Statistical Department have always dealt with the Census Department in Washington in connection with that matter, and usually find each five years new men in charge making the telephone census and who have had practically no experience in the telephone business; and they are always ready and willing to avail themselves of our experience and as-istance, understanding what it is, as they want to make the telephone censuses as near exactly alike as possible.

Q. Now, the General Staff gets up these census reports for the Southwestern Telegraph & Telephone Company?

A. The reports for the year 1917, which is the latest one that was made, were prepared by the General Staff,—by the Statistical forces, very little date being required from the various Associated Companies; that is, the regular monthly reports or annual reports of the Associated Companies were such as to readily give the date required.

Q. What benefit is it to the Associated Company, aside from the

census reports?

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A. Why, I believe it is necessary in order to operate the business economically and satisfactorily and efficiently, to have such statistics, and that is one thing the Company can do better for the chole system than each company could do it for itself. I think that the advantage in it, that they are not required to turn their attention or strain their energies to things of that kind, but have it taken off of their hands by the General Stæff for the Bell System.

Q. Does the General Staff engage in any work for the benefit of

independent Companies?

A. It does not.

Q. All of its work is done for the benefit of the Associated Comanies.

A. It's done for the benefit of the Bell System, yes,

Q. Now, can you mention some specific service rendered by the Statistical Department other than the ones already mentioned? What I had in mind is representation before the Priority Board.

837 A. Yes, in 1917, when the Priority Board required——
Mr. Howard (interrupting): There is no Priority Board now, is there?

Mr. J. D. Frank: No.

(By Mr. J. D. Frank:)

Q. Go ahead, Mr. Blair-Smith.

A. In 1917 the Priority Board was requiring each industry that wanted materials,—raw materials, to show the necessity and why it should have them at that time. The telephone companies needed raw materials very badly for their extensions, and the General Staff

presented such information as was necessary to Washington and secured authority for such raw materials as were needed under restrictions. At the same time there was new capital needed in the System and it was necessary for the General Staff to present before the Capital Issues Committee the rights of the telephone interests to absorb capital from the market when the Government was floating its various bond issues. I might state that at the same time, that is, during the period of the war, the Bell Telephone System assisted the Signal Service Department of the Army—

Mr. Howard (interrupting): What's all thia got to do with this,

your Honor?

Mr. J. D. Frank: It has this much to do with it: We are showing what services have been rendered by the American Telephone & Telegraph Company for the Associated Companies, work that they, themselves, would have had to have done except for 838 this service. The American Telephone & Telegraph Com-

pany did this work for the Associated Companies.

(By Mr. J. D. Frank:)

Q. Go ahead, Mr. Blair-Smith.

A. The General Staff of the American Telephone & Telegraph Company co-operated with the Signal Service Department by furnishing what the Government needed. At the same time for every and where they could best be spared, thus relieving the Associated Companies from absolutely disrupting their organization, and furnishing what the Government needed. At the same time for every employee of the Bell System private information was furnished to the Washington authorities as to his experience and his ecucation, so that he might be placed in the very best position, in so far as the Government was concerned.

Mr. Howard: Your Honor, what has that got to do with the service rendered by this local exchange? There should be some

way of keeping within reason.

Mr. J. D. Frank: If your Honor please, as the witness is trying to explain, the United States Government called on the Associated Companies, including the Southwestern Company, for this information, and instead of the Southwestern Company having to work up all of this data, and going before this Priority Board amd the branch of the Government that had charge of this Signal Service work, that work was done by the General Staff under this license contract; and what we are trying to do here is to show what services have been rendered and are being rendered under this license contract.

Mr. Powell: Did the Government call on the little local

exchange at Donroe and-

Mr. J. D. Frank (interrupting): No, they called on the particular company, and the companies necessarily would have to get this information for the Government.

Mr. Howard: It is something entirely in the past, and soden't

exist now

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Mr. J. D. Frank: Do you say that is is not material if real service

was rendered by the American Telephone & Telegraph Company

which relieved the Associated Company of doing anything?

Mr. Howard: I don't think it relieved us of anything. We are burdened down here and absolutely rendered intolerable by your charges that this little company is carrying to such an extent that you can't operate on account of all these added charges and these carrying charges that you are piling up on us.

The Master: It might be material; go ahead.

(By J. D. Frank:)

Q. Go ahead, Mr. Blair-Smith, if you have anything else to say. A. Well, it develops his experience also in carr-ing on his work, so that when he returns he will be of more advantage to the Associated Companies. That, I think, is enough information of what the

Companies. That, I think, is enough information of what the Statistical Department does along these lines. One very important thing I have omitted, and that was, during the period of Federal control of telephone property there wasn't any Department that the

Federal control affected as it did the Accounting Department; it meant that the Government was the operating factor of the telephone properties and that the corporations continued to own the properties and built the properties. The Government operated them, received the revenues and paid the expenses, and it was necessary to keep entirely separate the functions of the Government and the functions of the telephone companies. The General Staff handled this whole matter for the Associated Companies. It first made the contract for just compensation with the

Postmaster General.

Mr. Howard: Where did you get that just compensation?

A. That has always been used in the President's proclamation and the law of Congress. The law itself has always spoken of it as "just compensation."

Mr. Howard: Would you mind stating right there, so as to get it

in the record, what that compensation was?

Mr. J. D. Frank: We have already got a copy of the contract in the files of the original case and you have seen a copy of the contract. It was attached to our petition.

A. Will you let me finish my answer first, please?

Mr. Howard: Yes sir.

A. As I say, the General Staff entered into the contract with the Postmaster General for the Bell System as a whole, relieving the Associated Companies of this work. It devised a method by which

the accounts of the Government and the accounts of the corporation might be kept in the same set of books, all with the concurrence of the accounting forces of the Postmaster General's Department, and it negotiated the settlement with the Postmaster General for the System; it took care of all accounting details, all questions that arose in connection with this matter, relieving the Associated Companies absolutely of that burden. Now, to answer your question, the contract in brief, and the best that anyone could give it from memory, was;

First. That the Government would provide depreciation reserves equivalent to the depreciation reserve set aside by the System for an average of three years; that was, I think, averaged 5.72% of the value of the property,—the book value of the property, and the Postmaster General was to pay to the American Telephone & Telegraph Company the license revenue exactly on the basis by which it has heretofore been paid by the Associated Companies.

Mr. Howard: Four and one-half per cent?

A. Four and one-half per cent, and in addition to that the Postmaster General was to pay to the Bell System an amount as just compensation equal to the dividends paid on the stocks outstanding and in the hands of the public for a period of three years, the interest and amortization charges on the securities outstanding and in the hands of the public.

Mr. Howard: Eight per cent dividends were guaranteed?

A. Eight per cent dividend was guaranteed.

Mr. Howard: Dividends to the stockholder, and in addition to

that, the sinking fund for interest?

A. No sinking fund. A fund to take care of the interest and what we called the amortization charges, that is, the designated charges.

Mr. Howard: Pay the interest charges on the bonded indebted-

ness, in addition to the 8% paid to the stockholders?

A. Exactly; and if bonds had been sold at a discount, the amount of the discount applicable to the year of Federal control. In addition to that the Postmaster General was to maintain the properties in the same state as that in which he received them.

Mr. Howard: That was all I wanted to get,-that just contract.

(By Mr. J. D. Frank:)

Q. Mr. Blair-Smith, what do your records show as to the date when the first stock interest was acquired in the Southwestern Telegraph & Telephone Company by the American Telephone & Telegraph Company?

A. In the year 1899. Q. That year 1899—

A. (Interrupting.) 1889,—beg your pardon. At that time less than 30% was acquired by the predecessor of the American Telephone & Telegraph Company.

Q. Now, have you ever hade any study or investigation to ascertain what money is costing the American Telephone & Telegraph

Company in 1913 and 1914?

A. In 1913 and 1914 I made a study that covered a period of ten years from 1902 to 1912, and there I took the cost of money, that is, the actual money that the Company had been able to secure.

which was several hundred million dollars, and I considered the cost of the money, the dividends paid on the stocks out-

standing and the interest paid on the stocks outstanding and the interest paid on the amortization charge, the amortization of the bond discount applicable to the particular period and for the ten years the money averaged $6\frac{1}{2}\%$.

Q. That was from 1902 to 1912?

A. Yes

Q. Now, what has the American Company been paying for money

since that time?

A. If the same kind of study was made up to the present time, it would show that the money was costing the American Telephone & Telegraph Company more than that. The most recent loan made the American Telephone & Telegraph Company was one for \$50,000,000.00 on October 1st, 1918. We sold these notes, three year notes, at a discount of \$3.00; that is, we got \$97.00 for them, which was about 7.25 basis,—a little less than 71/4%. Those bonds were sold at that time at that rate, but at the present time the bonds are selling on the market on a basis of 73/4%. Of course, dividends of 8% continued, and I think that we calculate the cost of money the Company now had in its assets, or cost of what the Company has, it would be over 7%.

Q. Well, how does the American Company secure money?

A. It secures money, generally, in several ways,—the Bell System it might be said, secures its money mainly through the sale of the securities of the American Telephone & Telegraph Company, and that money goes to the Associated Companies, the American Company accepting their securities for it. In some instances the

Associated Companies have outstanding in the hands of the public their bond issues, first mortgage bond issues, and some few of the companies have their stock outstanding in the hands of the public, but by far the biggest part of the financing for the System has been done by the issues of securities by the American Com-

pany,-securities of its own.

Q. Then, how does the Southwestern Company, and other Associated Companies, get this money from the American Telephone and Telegraph Company?

A. As I explained, by loans on their notes, or by the sale of their

stock to the American Company.

Q. Well, where loans are made to the Associated Companies by the American Company, what do the Associated Companies pay for this money?

A. For the past few years the Associated Companies have paid, uniformly, 6% for the money,—the American Company gives them

a discount of 2% if they pay their note monthly.

Q. Now, does the American Company sometimes teke up securi-

ties which are issued by the Associated Companies?

A. Back in 1916 the Southwestern Telegraph & Telephone Company owed the American Company something over \$5,000,000.00; money was fairly cheap at that time and the American Company surrendered \$5,000,000.00 of its notes,—the Southwestern Company's notes, and took for them two-year $4\frac{1}{2}\%$ notes of the Southwestern Company.

Q. What was the Southwestern Company paying on that \$5,000,-

A. It was paying 6%. The notes were sold on the market and the benefit for the reduced price was given to the Southwestern Company, a saving resulting for the two years of \$38.

000.00. When these notes fell due the American Company paid them off and the Southwestern Company owned some other securities, which the American Company took in payment of the notes, that is, bought the securities from the Southwestern Company, providing it with the funds in order to do that.

Q. Well, has there been any financial transactions of any magni-

tude of recent date?

A. During the year 1919 the American Company loaned the Southwestern Company \$1,658,960.00, and in January of this year it loaned the Southwestern Company \$200,000.00 on its 6% notes. All of these loans were made on 6% demand notes of the Southwestern Company. It is interesting to say that for the year 1920 the Southwestern Company will want \$4,500,000.00 of new money in order to take care of the business in Texas.

Q. Is any part of that applicable to Houston?

A. The estimate made shows that the city of Houston, itself, will require an expenditure of \$500,000.00 on its plant in order to take care of the extensions and growth for the year 1920.

Q. And the Southwestern Company gets that money at 6%.

A. The Southwestern Company has gotten it at 6%; there isn't any pledge under the $4\frac{1}{2}\%$ agreement that it will, but the American Company has always loaned it at least as low as 6% where it was able to get the money.

Q. Now, whenever the American Company issues securities and sells them, does it get 100 cents on the dollar on those securities?

A. It does not. As I explained, it sold its own three-year notes in October, 1917, at 97 cents on the dollar,—they were 6% notes.

Q. You say the American Company has never charged the Southwestern Company more than 6%?

A. I think that's true. That's true for the past ten years I am sure.

Q. What is the highest rate of interest that you know of that has even been paid by the American Telephone & Telegraph Company?

A. Well, back in 1907, at the time of the panie, the American Company borrowed some money at 16¼%; had to borrow it on call,—it was call money. In recent years, the highest paid is 8.46%.

Q. Now, was the Southwestern Company borrowing money from the American Telephone & Telegraph Company at that time?

A. I haven't gone back that far. I can tell you this, though: As I said, the notes sold in October, 1917, cost 71/4%, and we have loaned money to the Southwestern Company since that time at 6%.

Q. Then you have loaned it to the Southwestern Company at

11/4 % cheaper than it cost you?

A. That particular money, but if you average the cost of money the American Telephone & Telegraph Company must include the cost of the stock, the dividends,—I don't think you ought to take out any particular lot of money; I think you should consider all the money of the American Telephone & Telegraph Company, and it would probably be an average of seven or seven and one-half per cent.

Q. What is the practice of the American Telephone & Telegraph Company in giving to the Associated Companies, including the Southwestern Company, the benefit of its credit in the

financial world?

A. The American Telephone & Telegraph Company has always considered itself as the financing corporation of the Bell System. It has advised with the Associated Companies in connection with their finances, as well as sold its credit on the market,—used its credit on the market in order to get the funds to carry on the telephone business. It naturally happens that some sections of the country are less prosperous than others, and a uniform rate has always been made by the American Telephone and Telegraph Company to the various companies; those who can afford to pay more have paid more, and those who have not earned it have paid less. The Southwestern Company has earned and paid less than the average of all the companies of the System.

Q. Have you any figures there with reference to how much money the Southwestern Telegraph & Telephone Company has borrowed from the American Telephone & Telegraph Company in recent

vears?

A. From 1912 to 1919, inclusive, the Southwestern Company has borrowed \$13,763,000.00 from the American Telephone & Telegraph Company.

Mr. Howard: How much? A. \$13,763,000,00 actual money.

(By Mr. J. D. Frank:)

Q. And what was the highest rate of interest they paid on that money?

A. Six per cent.

Q. What are the chief assets of the American Telephone & Telegraph Company?

A. It consist of stocks and notes of the Associated Com-

Q. In financing, how does it give the Associated Companies the Benefit of its credit?

A. By borrowing money on its own credit and lending that money

to the Associated Company.

Q. Now, what difficulties, if any, would the Southwestern Company have in financing itself if it were independent and had to go out in the open market to get money for the purposes of extensions?

A. The Southwestern Company would either have to go into a local market, or go into a market and be in competition with all the other companies of the Bell System,—all other telephone companies; it would have to have an organization to take care of such financing; it would have to issue its stocks and its bonds to many individuals,

incurring this expense of selling its securities after they were issued,—must have an organization to take care of the payment of dividends and take care of the transfers of stock, take care of the payment of bond interest; it would incur the expense of figuring in advance its needs as to the actual money required, whereas, at the present time as it needs the money it calls on the American Telephone & Telegraph Company and has, in the past, always gotten it and gotten it just as it needed it, by being able to make its plans year by year and looking forward a year at a time, and has known that it would get the amount of money that the plans called for. It has been able to organize its construction forces in a more elastic manner and keep these forces engaged and busy during the whole

849 period of time. Of course the employees, knowing that their tenure of office is constant, have stuck by the Company, have become experienced, and they are more loyal, understand the work better than if they were fluctuating in and out, and so I think every advantage has been achieved through the methods of having the American Telephone & Telegraph Company, or one company do the financing for the whole System, rather than have each Company in the market competing with the other companies in carring on this work, which they would naturally do.

Q. Mr. Blair-Smith, would it be easier or harder for this local exchange to operate, to finance itself, if it were standing alone and and not a part of some system, such as the Southwestern Telegraph & Telephone Company,—if it was just a local independent exchange, could it finance itself as well as if it were a part of a large com-

pany?

A. We have always found that the larger territory covered by a particular business, the easier it is to finance, because one city or one locality has its ups and downs. The whole country may have its ups and downs, but it is not as likely as the best of towns or one locality, and by having the steadying influence of a nation-wide organization, so that those communities that are suffering at one time are being helped by communities that are not, and those communities that are prosperous, of course providing the citizens during the times of prosperity,—there has been more even distribution, more even development and better service furnished to the public, I should say, comparable with one little State as against the whole United States,—they are more solid and more powerful.

Q. Now, you are accustomed to dealing in these financial matters. There has been an exhibit intorduced in evidence in this case, showing that from the time of the organization of this Company, from the year 1883 on down to the year 1919, the average dividends paid by the Southwestern Telegraph & Telephone Company was 5.36%. In your opinion, could a telephone company which had been paying an average dividend of that amount go out into the open market and borrow money at 6%, as the Southwestern Telegraph & Telephone Company has borrowed it from the American Telephone & Telegraph Company?

A. I don't think so.

Q. Count it sell its stock at par?

A. I don't think it could sell it in this locality at par, and I don't think it could sell it in any locality at par,—I mean at any time. Of course, I know it couldn't now, but would have found it very difficult to do so. This company has been kept free of mortgages and its financing has been done mainly through stock issues. It has at the present time about \$35,000,000.00 of stock, \$3,000,000.00 of notes and \$1,000,000.00 of bonds outstanding.

Mr. Howard: What company is that?

A. The Southwestern Telegraph & Telephone Company. If it had attempted to finance itself, the Southwestern Company would have had to have gotten its money on first mortgage bonds and would have had difficulty in raising the money on their own security, unless they should pay a very much higher rate than 6% or 8%, I think.

851 Q. Now, aside from the matter of credits, is there any advantage to the Associated Companies in having their financing done trough the American Telephone & Telegraph Com-

pany?

A. I think it's a more economical method of financing. As I explained, that is, it doesn't require the same organization in the Company if it gets its money from the American Telephone & Telegraph Company,—all its dividends are paid to the American Telephone & Telegraph Company and all its interest charges are paid to the American Company instead of widely scattered and a large number of separate individuals.

Q. Didn't you also say that on account of this financial arrangement you do not have to keep employees, such as secretaries and treasurers, whose duties are to look after the securities that are

issued?

A. They, of course, have a Secretary and Treasurer, but they don't have these functions; they take care of other work and do not have to have the office forces that it would be necessary to have and that they would need if they had to go out and get the money.

Q. Do financiers make any distinction with reference to making loans to a business and where they make loans that go into a busi-

ness where there is a hazard incident to the business?

A. Of course, the first distinction is borrowing, for instance, a merchant borrows funds on short time, it being known that he going to use the borrowed money to carry his stock of goods until he sells it, and when he sells it he will liquidate his debts,—he had the money to liquidate it; but when an organization, or when a

telephone business borrows money it doesn't borrow it to carry a stock of goods, but borrows it to invest it permanently

in plants, and they must issue securities, permanent securities or as nearly permanent as it is possible to make them. The best financing possible is issuing capital stock. The next best is long term bonds, and, of course, the least desirable is short term notes, but they are more desirable when rates are very high than to issue long term notes at high rates.

Q. Do you have to pay a higher rate of interest on money that is

to be put into a business in which you take a risk and which has

a hazard incident to that business?

A. The security is graded by the market on the basis of its soundness,—on the basis of returning the money to you at the time you want that money, and, of course, capital stock is what is known as a junior security. First mortgage bonds are a first mortgage and they must be met before any money goes to anybody else when they fall due. If that is not done, then the property becomes the property of the owners of the bonds, and the stronger the security back of the particular property, why the lower rate of interest is charged or accepted on the security.

Q. Will you briefly refer to come of the hazards incident to the

telephone business?

A. Why, I think the greatest hazard in the telephone business is regulation during these times, and they are critical times. Any other business other than a business which is publicly regulated has to charge what the business must have,—must absolutely have in order to get along. At the present time the telephone business is not permitted to make its rates such as people are willing to

853 pay, but is compelled to make its rates that it is permitted to make by the regulating bodies; the merchant changes his prices from day to day as the labor market changes, but the labor market changes for the telephone business just as rapidly as it changes for the manufacturer or merchants, but a telephone company isn't permitted to change its rates as that labor market changes.

Mr. Howard: But it hasn't the competition of other business?

A. The public authorities, that is, not only public authorities, but the public itself has, I think become sick of the work, what's known as telephone competition throughout the United States, and think

they have so expressed it, -it is naturally a monopoly.

Mr. Howard: But whatever the cause, it is a fact that it is a monopoly and competition is eliminated, and they don't have that hazard that is incident to individual enterprises and mercantile enterprises.

A. That's quite true.

(By Mr. J. D. Frank:)

Q. Does the fact that they have no competition relieve the situa-

tion in anywise?

A. I think the fact that they have no competition enables the telephone company to produce service cheaper to the public and more satisfactory to the publis. A business or value of a security is not measured entirely by the soundness, but by the property back of the security or the cost of reproduction of that property on the

basis of that that property is paying in dividends, and if there is no prospect of that company paying dividends or paying interest, why, people don't want the security,—you can't

sell it. This business is a growing business; the Bell System, as a whole, put into plants last year more than \$67,000,000.00 of new money, and it is anticipated that this year it will need at least as much. As stated, the city of Houston itself wants \$500,000.00.

The money markets are extremely critical, and unless a telephone business can go to the public with the assurance that it is going to earn its dividends or fixed charges, the public is going to look on it as unsafe. I think the telephone business, without expansion, will become anæmic, it will dry up, for without expansion, the public are clamoring for service they can't get and when that becomes a fact, I don't know what the results will be. It ought to be explained that when the telephone business grows and another station is added it isn't sumply a box on the wall, but it is the box on the wall plus the line to the central office, going through a cable or a conduit in the street and centering on the switchboard, every item of which is individual to that particular station, and for every station added an investment cost of somewhere between \$150.00 and \$175.00 is added to the plant.

Q. Now, Mr. Blair-Smith, the evidence in this case shows that the rates for telephone service in the city of Houston, with the exception of some eight or nine months, while the property was being operated by the Government, have remained stationary down to the present time; that the telephone company has had to pay increased cost of money, increased cost of materials and labor during all that

time, has it?

A. It has.

855 Mr. Howard: Those things are all self-evident. that it is a self-evident fact that everybody understands, and they couldn't avoid having done it if they had tried to.

(By Mr. J. D. Frank:)

Q. Now, Mr. Blair-Smith, in order for stock to sell at par, must it carry a higher rate of dividend than the interest on bonds? A. In order for stock in the same corporation to sell at par?

Q. Yes sir.
A. I should say that a stock, to sell at all, must command a higher rate than a bond, unless you are giving too much on a bond. main market consideration is that a bond will be paid, paying a lesser rate than the rate that is expected and required for stock. I think an illustration of this is the fact that the American Telephone & Telegraph Company's stock is paying 8%, is on the market and can be bought today, I think for 98, whereas, its bonds, that is if the rate is over 8% on the money you invest, and none of its bonds are selling at as high a rate as that,—some of the convertible bonds are selling at about 61/2% basis, and some of its bonds at 73/4% basis.

Mr. Howard: Mr. Blair-Smith, isn't it a fact that ordinarily the stock and the assets should coincide, unless there is a surplus, or something of that character, set aside,—why, the assets and the stock certificates, which are merely evidences of a certain pro rate part of the assets, they should coincide?

A. That the stock, plus the bonds, plus the guaranteed indebted-

ness plus the surplus, equals the assets?

856 (By Mr. Howard:)

Q. That's correct, technically, in accounting, but when you get down to analyze the proposition, the certificate of stock, you call them assets, but as a matter of fact thay are evidences of ownership?

A. We call them liabilities, but they are evidence of an equity in

the ownership.

Q. If a bond reduces the value of the ownership just that much, it is an encumbrance, and the facts are that they are always an encumbrance or a liability upon the stock, are they not?

A. Well, I think the assets are security for the bonds first.

Q. There is no question about that-

A. (Interrupting.) If your stock is actually paid in, if the stock is actually paid in and you have got your money for your bonds, you have got the amount of the stocks and bonds in your assets.

Q. Well, of course, that's true, but the fact that money is supposed to go into other assets, and that may or may not reduce the equity in the certificate holder according to the use that the bond is put to.

A. It ought not to reduce the equity of the stockholder.

Q. In this contract with the Government there was an 8% return guaranteed upon the stock; then in addition to that, that stock represented the assets, that is, the property; the owners of that stock were the owners of the assets burdened with the bonds. Now, if you take and you pay the interest on the bonds in addition to the dividends on the stock, aren't you adding to the fair return the amount of the interest which should be paid by and come out of the pockets, really, of the stockholders?

A. I don't think so. Let's take it this way; you sold your stock, and as a matter of fact the American Telephone & Telegraph Company got \$1.08 for every dollar's worth of stock on the market,—that \$1.08 has gone into the assets and the property sold bonds, and the proceeds of those have gone into the property. Now, then, you must pay the man who loaned you the money on the stock and pay the man who gave his money up for bonds. They must both be paid from the earnings of the property. Now, what the Federal Government—

Q. (Interrupting.) That wouldn't be true if all the stock is paid

in up to its par value and money borrowed on bonds?

A. That's what's been done in our case. As a matter of fact, in the contract that was executed with the Postmaster General, the Bell System gave up any idea of an operating surplus, which it has naver failed to have at the end of any fiscal year.

(By J. D. Frank:)

Q. In a few words, Mr. Blair-Smith, I wish you would sum up the services rendered by your Department to the General Staff of the Associated Companies.

A. Reviewing what I have already stated, and considering that I am testifying in connection with financial services as well as account-

ing services, a summary would be something of this nature: That the American Telephone & Telegraph Company has, through its organization and its credit, raised the funds that were necessary for investment in the State of Texas, and in the City of Houston, and loaned these funds to the Southwestern Company on its Securities; that that has been an economical thing, for the reason that one or-

ganization has financed the whole system and one organization has issued its securities: these sucurities are are taken care of and dividends paid; the transfers of stock are made and interest is paid by one organization; that through the fact that one organization has done it, there has been eliminated the competition between the Associated Companies, themselves, going on the market and bidding against each other in the territories in which they hunt for the capital that is there available. That has resulted furthermore, in each company knowing at the beginning of each year that the funds needed by it would be forthcoming and has been able to make its program according and to employ the help necessary to carry out that program and to give them steady employment. That the accounting system of the industry, as a whole, is uniform; that all of the work in connection with that accounting system that could be done by one company for all of the companies has been done by the American Telephone & 'Telegraph Company; that the experience of all of the Associated Companies has been accumulated in one, by one central organization the American Telephone & Telegraph Company, and the benefit and every advantage has been given to all of the companies. That all transactions with the Federal authorities in Washington for the Bell System have been carried on through the one corporation, the American Telephone & Telegraph Company, for all of the companies, saving them the time and expenses of sending their own employees to Washington. best possible systems which could be devised by human ingenuity for accounting have been undertaken and complied by the American Company for the Associated Companies, and they themselves have

859 Q. Well, now, is the Southwestern Company charged anything by the American Telephone & Telegraph Company for

this service other than the 4½% payment?

A. It pays nothing to the American Company other than the

41/2 % payment, except, as I say, for interest and dividends.

applied these systems to the operating problems.

Q. Now, just one other question and then I am through: Is it, or not, customary for big industries to have technical research work done, such as is done by the American Telephone and Telegraph Company?

A. I know of no large industry that hasn't its technical experts for the purposes of achieving better results and solving the problems

of developing the industry.

Q. Does the United States Government do any work of this kind?
A. I had a study made of the estimates of appropriations required for the service for the fiscal year of the United States Government ending June 30th, 1921, and there I find included the requirements

of \$59,000,000.00 for technical research in Washington. That is out of a total appropriation of \$2,856,000,000.00 in those particular Departments.

Q. So the American Telegraph & Telephone Company is not by

itself in carrying on this kind of work?

A. Yes, it is not by itself at all. That is subdivided,—technical research for internal use, \$31,000,000.00,—technical research,—\$21,000,000.00,—a total of \$59,000,000.00.

(By Mr. D. A. Frank:)

Q. Just what does this rate of interest paid by the Southwestern Company amount to, Mr. Blair-Smith when discounted by 2%?

A. 5.88%.

860 Q. That is what is actually paid by the Southwestern Company for this money?

A. Yes, sir.

Q. Mr. Blair-Smith, yesterday, in answer to certain questions as to the risk of the business, you said something with reference to regulations being one of the risks of the business. Do you wish to

enlarge on that answer?

A. I want to enlarge to this extent, that I don't fight just, intelligent regulation, but I do subject, and what I meant to say yesterday was, that I thought unintelligent and unjust regulation—just and intelligent regulation is the kind of regulation that this Company, or rather the American Company, has always felt was the proper regulation; that it was justified and necessary for a monopoly business; that it was necessary for a monopoly to have regulation, but that it should be the proper and intelligent kind.

Q. That it should be regulation that takes into account the needs of the Company as well as the needs of the public in having good

service?

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A. Exactly. It should regulate the public as well as regulate the industry.

Q. You mean that a fair rate of return should be earned by the Company, and that a rate should be fixed so that it should be fair?

A. I mean that the Company should be protected from the public, that is, should receive fair compensation, and the public protected from the Company and not forced or permitted to pay more than a fair rate of return.

Q. Have you anything in your files that would tend to indicate what New York financiers and bankers think about

what a perfectly good property ought to earn in the City of Houston?

A. Just before leaving my office I got through the mails a copy of a circular issued by Harris, Forbes & Company. I believe there is no house that handles bonds that stands higher than Harris, Forbes & Company. They do not deal in stock and simply handle bonds,—is a bond house and has been for years, and they are just advertising an issue of \$900,000.00 of Houston Gas Company first mortgage 7% gold bonds, and they have offered those to the public at a price yielding to the purchaser a return of 8% per annum.

They recommend these very highly, indeed. They are a first mortgage on the property, they have back of them over three times their value in assets and the earnings of that property are reported as more than three times the amount of the interest charges.

Q. That's in Houston, Texas?

A. The Houston (Texas) Gas Company.

Q. Have you more than one copy of that circular? A. No, I have not; but I will secure more if they are needed.

Q. What is the price at which those bonds were sold? A. The price is 97%ths; the bonds mature March 1st, 1923. They are just about three year bonds, and the yield to the purchaser is 8%. Of course, the bond house did not pay as high a price as that for the bonds,-that's the price that they are offering them to the public for.

Q. So they didn't yield 97% to the Gas Company?

A. They did not. I imagine they did not yield anything like 973/sth- to the Gas Company; they must have been sold around 95, I should guess, but that's only a dazard. 862

Mr. D. A. Frank: We will offer this in evidence as Plaintiff's Exhibit No. 140.

(The circular was thereupon received in evidence and marked Plaintiff's Exhibit No. 140, witness Blair-Smith, and is filed herewith.)

(By Mr. D. A. Frank:)

Q. You will furnish those copies, you will do that?

A. Yes, I will send those.

Q. That is on a first mortgage bond,—that's a closed issue, and produces 8%. If this same Company or some similar company handling securities were attempting to sell stock, could they sell stock on as favorable conditions as that?

A. I don't think they can on anything like that at present, if they would be able to sell the stock, but stocks are not very saleable at the

present time.

Q. If a first mortgage bond produces 8% and it is conceded that the company is in every way sound financially, to be a similar investment what would the stock have to produce?

A. I think the stock must produce around 9% or 10% and there must be assurance that the protection back of it is not going to be

hampered by unjust regulations.

Q. And if you have to take into account the expense and delay of trying rate cases, and you have to go into court, it would add something to what you would have to do in order to get money for

a new plant? 863 A. Necessarily. It should be borne in mind that when a company mortgages its property, it is a closed mortgage and is a first mortgage on its property; that method of financing is only for the life of that mortgage, unless it has the ability to go out and secure the money and retire the issue, and that isn't a favorable

method of financing for a corporation of this kind, due to the fact that your highest class of security is issued against the property and the quantity of money raised on it is limited, and in the case of a telephone property it grows and grows continuously,-when a telephone property stops growing, why, it is going to die.

Q. If a telephone property in Houston were owned by a local concern and financed in the same way that this gas proposition is financed when that \$900,000.00 was used up how would they get

more money to build more plant?

A. I don't know of any way, except to issue stock or issue a junior mortgage, both of which would require higher rates in order to get investors to buy them or retire that mortgage if the property justified it; and in order to do that it would be necessary to call the bonds at more than par, they usually provide that, but it is not a satisfactory method, and the continuous issue of securities can be made practical only by issuing stock.

Q. Would that, or not, be very difficult for a local corporation owing a property like that in Houston,-would it be very difficult

for them to finance themselves for a period of twenty years?

A. In my opinion, it would be quite a difficult thing to do. I think a very large measure of the success of the Bell System

is the fact that they have followed the plans prescribed and have been able to get the necessary money that's been required of it up to the present time to expand as the country has grown.

Q. There have been quite a number of independent telephone companies that first started out with bright prospects and afterwards failed. Did the fact of their not having proper financial relations

have anything to do with the failure?

A. I think it is more than that. I think, in the first place, it's an improper idea of the rate they could run at; they ignore the subject of depreciation and were unable to get a sufficient amount of capital to continue to build to supply the demand, and aside from that, they never had the high efficiency that the Bell System was able to have through the contact with the experts and the continuous improvement and development of the art.

Q. Well, a company might be successful and then a time might

come when they couldn't finance themselves further?

A. That has been the case.
Q. That has been the case in a number of instances?

A. I think so.

Q. In your opinion, has the relation that has existed between the American Company and the Southwestern Company, in so far as the financial services are concerned, been of great value to the Southwestern Company?

A. I think there is no doubt whatever but that it has been most

advantageous to the Southwestern Company.

Q. That's especially true in the last four or five years, during which there have been more expenditures and during which time it has been very difficult to get money, is it?

A. That's ture.

Q. Suggestion has been made here at one time during the trial of this case by counsel for the City that this Company will be very well pleased if it netted a reserve for depreciation without having

any dividends. Do you think that's a sound proposition?

A. You think-you must only look at it from the standpoint of yourself as an investor, as the man furnishing the money, to see that it is not sound,—that you must have a return for your money, and at the same time feel that the money you put into it will be protected and that you can get it out if it is in the nature of a loan, or that you are going to have a continuous income from it if it is in the nature of a stock investment.

Q. Has the American Company, through its ownership of stock in the Southwestern Company, secured any dividends by means of

or through the reserve for depreciation?

A. Absolutely none. The reserve for depreciation is for the protection of the property.

Q. What becomes of the reserve for depreciation?

A. The reserve for depreciation, until required for actual replacement, is invested in new property which does not have to furnish a return on the investment.

Q. By that you mean no dividends are paid on it.

A. No dividends paid on it whatever, and no interest

866 charges paid on it.

Q. The evidence in the case shows that for a period of a number of years, the Southwestern Company has averaged something like 5%,—5.36% as dividends. Has the American Company had its proportion of those dividends?

A. The American Company has.

Q. Has it got anything else from the Southwestern Company

except its proportion of those dividends?

A. It has gotten the interest charges on the amount of money that it has loaned it on its notes, and has gotten the payments under the license contract, that is, the $4\frac{1}{2}\%$ payments, that is everything that the American Company has gotten from them.

Mr. D. A. Frank: I believe that's all.

Q. Now, Mr. Blair-Smith, you have stated here a very considerable benefit that has resulted to this Southwestern Company and I understood you, in speaking of them, all the time as the Associated Companies. Now, the Southwestern Company—treating them that way for the minute, you claim a considerable benefit is derived from the service of the American Company by saving that this money was loaned at 6%. I understood you, however, to say that your contract carries no such obligation?

A. That's true. The contract carries an obligation to assist the

Company in its financial arrangements.

Q. Now, that might be, however, limited to advice and good offices in the matter, and not to any obligation in so far as the payment of any specific sum of money is concerned, or doing any specific thing?

A. That's true; but at the first of each year you will find that an allotment or pledge has been made to the Company as to how much money it might expect the American Company to furnish during that year.

Q. Now, up until 1916, it would not be considered any great benefit to a solvent concern to secure money at 6% on long time

securities, would it?

A. I think it would.

Q. Wasn't 6% prior to 1916 regarded as a rather liberal rate of interest?

A. No, it was not.

Q. Do you mean it was not when you confine it to public utility earnings, or do you mean it was not when you applied it to municipal and county bonds, and well secured bonds?

A. Well, now, if you speak of county bonds, city bonds, they are in a class by themselves. There is no public utility that can offer

the same class of investment.

Q. You volunteered a general answer, and I want to get it to

apply you said that 6% was not considered liberal.

The Master: Mr. Blair-Smith, the securities of the American Telephone & Telegraph Company are regarded in the business world at gilt-edged, are they?

A. They have been so recognized until recently, and recently there has been expressed a great deal of doubt as to whether or not the impediments of regulation were not very detrimental to the the System as a whole.

868 (By Mr. Howard:)

Q. I have been speaking of the time prior to 1916, Mr. Blair-Smith.

The Master: He raised the question of municipal bonds,—county and city bonds, and you suggested that they were in a class to themselves. Just as a matter of curiosity, I wish to know why a municipal bond can be marketed at 5½% and why your bonds or securities should bear a higher rate of interest where they are sold together?

A. At the present time there are two reasons for it; First, as to the security back of it, a municipal bond has the security of the whole community, the whole town, back of it. I believe there is no record of a city ever having defaulted in the payment of its interest and its bonds. You can go and sell the property, the real property there, and the business of the town is back of that bond. Its diversified, and a second consideration at the present time is the Income Tax feature. You will find that a city bond is recognized as a savings bank investment; the life insurance companies can invest in them, trust funds are invested in them, and our bonds are not as high class a grade. We have one issue of bonds which is recognized as a savings bank bond.

The Master: What rate of interest does that bear?

A. That is a 4% bond, but is now selling on the market at 78. It is selling on the market at around 6½%. The Income Tax fea-

ture, as I say, is another important consideration, especially to the rich man, who must pay 40% or 50% tax on the super-tax. The rich man buys those and he is exempt from any tax on that whatever.

The Master: On a city bond? A. On a city bond, yes, sir.

(By Mr. Howard:)

Q. Well, there are certain principles that govern loans, and the basic principle is the value of the security, isnt it, Mr. Blair-Smith?

A. The value of the security and the return.

Q. The value of the security, of course, and the return.

A. That is, it is the safety of the investment and the return on

that investment.

Q. Oh, yes, naturally a man, if he can get 10%, will take more risk than if he was only getting 2%, but the basic thing, the firsthing that a man contemplates is the value of the security offered?

A. It is the safety of the security offered and the return on that

security.

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Q. Well, let's take it a little further. What is the first element you look at in trying to arive at the conclusion as to whether or not

it is a safe, -what are the elements of safety?

A. That depends on the security that you put out. If it's a stock, you want to know that you are in a company that is going to last and is going to be able to earn a return that's promised on the particular security.

Q. But you look to the assets of the company,—that is the first

thing you look to?

A. The assets of the Company are a measure of the safety.

Q. And the Main measure, are they not? Or are there other things, the prospects and outlook, and yet you want something that you can put your finger on when you make your loan don't you?

A. I might have a property and it could have all the assets there, and have value back of it as far as the investment is concerned, and yet, if that property had no returns and the income was eliminated by that, that security would be recognized as practically valueless.

Q. Up to 1916 the banks of New York were loaded with money

upon which they were bid not over 3%, were they not?

A. You mean loaning money?

Q. No, the banks were offering the money, and savings bank investor could get 3%?

A. I think that's true, and think it is true at the present time. Q. Life insurance companies all over the country were making loans at 5% and 5½%, were they not?

A. I believe they were, on well secured real estate mortgages. Mr. D. A. Frank: You don't mean here in Houston?

Mr. Howard: I wouldn't say that they were not making some; I think they made some in Houston at 6%,—think they were after them at 6%, and I represent the Pan-American—

A. I can give you some information in connection with that, which would offset your theory. I consulted the Metropolitan Life Insurance Company in connection with a loan on a piece of real estate in New York in the Heart of the financial district, and I was told that the cheapest rate that they would consider would be 6%,

and that in addition to that the loan would have to be amortized very heavily, and that all costs in connection with the loan, amounting to around $1\frac{1}{2}\%$ of the loan, would have to

be paid in expenses.

(By Mr. Howard:)

Q. Your proposition is, then, that an A-1 New York City real estate loan,—that on a loan of that character that 6% is the cheapest money that can be obtained?

A. And that loan, then, would not be made in excess of-

Q. (Interrupting.) That was prior to 1916?

A. That was a few days ago.

Q. We were talking about prior to 1916,—what the conditions were in regard to loans prior to 1916. Do you undertake to say that you couldn't get money at less than 6% on good New York security prior to 1916?

A. I would not undertake to say that, because I have no examples

before me.

Mr. D. A. Frank: Well, how much stock are they buying?

A. I can answer the question that you are probably asking, Mr. Howard, by telling you that as of February 1st, 1916, the American Company took some $4\frac{1}{2}\%$ notes of its Associated Companies, those that were earning fair returns, some of them, and all of them earning a sufficient amount ot pay the interest on the notes several times; the American Company itself endorsed these notes to the amount of \$40,000,000.00 and sold them to bankers at the rate of 5.55%,—I think they were two-year securities.

(By Mr. Howard:)

Q. Four and a half per cent?

A. They bear $4\frac{1}{2}\%$,—the rate of interest, but sold to bankers at the rate of 5.55%.

872 Q. Then, up to 1916, at least, it was no particular benefit to a solvent concern like the Southwestern Telegraph & Tele-

phone Company, to borrow money at 6%, was it?

A. I should say that to a certain limit the Southwestern Company could have borrowed from banks,—various banks, on its short time paper, money at that rate; but, bear in mind that these coupon notes that I mentioned to hou are not only the notes of the Southwestern Company, but bore the endorsement of the American Company.

Q. I understand, but the American Company owns the Southwest-

ern Telegraph & Telephone Company.

A. It owns its capital stock.

Q. It owns its capital stock. You recognize the owner of the

capital stock as being the owner of the assets of the Company do you not?

A. I do not.

Q. Who does own it?

A. The Company.

Q. Well, who is the Company?
A. It's an incorporated Company.
Q. Who constitutes the Company?

A. That's a legal point that you probably know better than I.

Q. Don't you know, as an accountant that the owners of the capital stock of a corporation own the corporation—owns the capital stock and owns the corporation, and that the ownership—

A. (Interrupting.) I don't understand that the owner of a stock certificate has anything to do with the property except

873 through the management of it.

Q. You don't understand that the owner of all the stock in a property can handle it as his individual property?

A. No, indeed.

Q. Then, as I understand you, prior to 1916 this was no particular favor to get money at 6%, and as I further understand you, you are not able to tell me how much money has been loaned for the use of this exchange since 1916?

A. You make a statement. I didn't say that it was no particular advantage to the Southwestern Company to lend it money. I have always considered the Southwestern Company had a very great ad-

vantage in its arrangement with the American Company.

Q. We have gone over the proposition up to 1916, and the best that you can show me is that money prior to that time cost 5.55%?

A. I said that in 1916 it cost that. Now, if you want to go back of that year, I will say that in 1907 there were \$25,000,000.00 worth of three-year coupon notes of the American Company that sold on a 8.46% basis.

Q. That's in a panic year?

A. We have good years and bad years,—that is the year of a panic.

Q. And the American Tel. & Tel. Company pocketed the loss between 6% and the 8%,—I understood you to say that?

A. I don't know what you mean by "pocketing" the loss.

Q. Well, I probably am not as refined in speech as I should be, but I will try and make myself clear to you. Let me see, it will mean this: They borrowed money at 8% and loaned it at 6%, and whether they "pocketed" it or not, they sustained a loss of 2% on the loan,—did I understand you to say that?

A. In cases where the American Company loaned it at

6%, it stood the loss.

Q. I am asking you if you are stating to the Court now, if the American Company in 1907 sustained a loss of 2% for the benefit of its Associated Companies?

A. I can't answer that direct.

Q. You don't know?

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A. Whatever money it loaned-it loaned money at that time at 6%.

Q. And borrowed it at 8%?

A. It borrowed it at 8.46%.—On that particular loan.

Q. You call that intelligent financing? Or did you do that as an obligation under this 41/2% agreement?

A. We did not do it as an obligation; we did it because we be-

lieved it was the thing to do.

Q. For why?

A. You will have to ask the President why he did it. Q. You don't know, but that they used this money for the benefit of Associated Companies that it owned, or, to suit you and Mr. Frank, whose capital stock it owned?

A. Part of whose capital stock it owned.

Q. Well, 99.99% of whose capital stock it owned?

A. Of course, the main idea of the American Company is to do a union wide telephone business.

Q. Yes, sir. A. And it and the Associated Companies do it together. the Associated Companies are not as strong as other Associated Companies. It has always been, I believe, the opinion of those directing the enterprise that the United States public was a

fair public, and that if they were given good service, that

they would pay for it and would pay for it adequately.

Q. Well, let's see; I didn't see where the answer is responsive. asked you if they used the money for the purpose of assisting Associated Companies, 99 and a fraction per cent of whost stock they owned?

Mr. D. A. Frank: What time are you confining this to? time are you referring to, and what loan are you referring to? Are

you assuming that the American Company-

Mr. Howard (interrupting): No, I am talking about this loan. They borrowed money, he said, at 8% and loaned it at 6%, and I want to know who they loaned it to and asked him if they didn't loan it to Associated Companies, 99 and a fraction per cent of whose stock they owned.

Mr. D. A. Frank: There is no evidence in this case that the American Company owns 99 and a fraction per cent of the stock of all Associated Companies; in some of the Associated Companies, the

American Company owns only 30%.

(By Mr. Howard:)

Q. If it goes beyond the Southwestern Company, we are not concerned. Do you know whether they used any of that money for the

benefit of the Southwestern Company?

A. Why, we can't pick out our dollars and I can't tell you what we used that particular money for; but I would like to say this, I did testify that over a period of ten years the money the American

Company had raised had cost that Company more than 6%, 876 and I know that some of that money was loaned to the South-

western Company.

Q. Then back of 1916 you can't tell us of any particular benefit that this Houston exchange got by getting money at 6%, and as I understand your testimony, $5\frac{1}{2}\%$, after allowing all discounts, was about the biggest rate of interest you can account for, except the call instance, and you don't know that any of that came to Houston?

A. No, I did not attempt the statement that you made.

Q. Well, let me put it this way: Prior to 1915 or '16, point out a specific instance in which the Houston exchange received a benefit from the financial management of the American Tel. & Tel. Company,—not generalities, but specific instances?

A. I would have to go back and apply to the Southwestern Company's books. I have no direct information as to what was done in

connection with the Houston exchange.

Q. We agree upon this: Prior to 1916 it wasn't very difficult to negotiate bonds of a good, solvent company, such as the Southwestern Telegraph & Telephone Company or the American Tel. & Tel. Company, at 6%, including all discounts and commissions?

A. My information is that, and I have always beleived that Texas was a wonderful field for loaning money at high rates of interest; that Texas was a place where high rates were secured and that the people were perfectly willing to pay high rates for money,—that is, high rates in comparison with what rates were in the East. Now, we must classify loans; there are loans of all different classes. If you

speak of a real estate mortgage loan, that's of a class by itself and something that the Associated Companies have never

offered; and if you speack of mortgage loans, they are quite another class of loans; but if you speak of money put into an industry by purchase of capital stock, you get another class of loan, and all of those command different rates of interest. Now, the American Company has poured money into the State of Texas in order to build up the telephone business, and during a long series of years has had, I think, a very low rate of compensation or return on that money.

Q. (The question last above was read to the witness, as follows: "We agree upon this; Prior to 1916 it wasn't very difficult to negotiate the bonds of a good solvent company, such as the Southwestern Telegraph & Telephone Company or the American Tel. & Tel. Company, at 6%, including all discounts and commissions?")

you say to that question, Mr. Blair-Smith?

A. We have never attempted to negotiate any bonds of the Southwestern Company. The American Company itself could, in 1916, borrow money at around, or a little less than 6%, but I don't infer and don't mean to state that in all years prior to 1916 that that was the case.

Q. I believe I have understood you to say that you don't know what money has been loaned for the benefit of this exchange since

1916?

A. I don't know what money loaned to the Southwestern Company

has been used in this exchange.

Q. Mr. Blair-Smith, why do you take from the Houston exchange 4½% of its gross receipts; why don't you take 2½% or 10%, or any other figure,—why this particular figure?

A. The history of the arrangement between the American
Company and the Associated Companies goes back to 1883,
and from time to time the amounts charged for the instruments and
services of the American Company have been continuously reduced,

and in the year 1902, before I was connected with the American Company, the rate was further reduced to $4\frac{1}{2}\%$. Just exactly why $4\frac{1}{2}\%$ was fixed I can't state, but it must have been the business judgment which prompted that action.

Q. All you know is that in setting up your accounts you know the

charge has been made?

A. Since the year 1902.

Q. Now, yesterday you develled a great deal, in fact, at length, upon the services rendered before the Interstate Commerce Commission. Mr. Blair-Smith, treating this exchange as divorced from the toll lines, what business would it have before the Interstate Commerce Commission?

A. You are putting a hypothetical case that dosen't exist.

Q. Well, let me-just indulge me that much.

Mr. D. A. Frank: What was the question?

(By Mr. Howard:)

Q. That treating this exchange as divorced from the Southwestern Company and the toll system, what business it would have to be tracsacted before the Interstate Commerce Commission?

A. The exchange, without the toll lines, wouldn't be the exchange

that you find here now.

Q. Well, can you answer the question, Mr. Blair-Smith?

A. I can answer this question, that an isolated exchange, with no toll lines connection, in the city of Houston, would, so far as I know, have no relations with the Interstate Com-

merce Commission.

Q. Then the expenses incurred for the services that you rendered are of necessity, rendered for the whole system of the Southwestern Company that conducts this exchange?

A. And the development of the whole city is dependent upon a

connection with the tell lines.

Q. I am not speaking of that I say, it is the toll system that requires the representatives that you spoke of before the Interstate Commerce Commission?

A. I shouldn't say that, because I don't think you can divorce

it to that extent.

Q. You are trying to divorce it here, are you not, in the matters of revenues and things like that?

Q. Mr. Blair-Smith, then as I understand you, this whole service that is rendered in your accounting,—and you spoke of standardized accounts,-which no doubt are very beneficial where you are conducting a large business,-a great number of associated companies, all those accounts were standardized largely for the convenience of the American Tel. & Tel. Company and associated companies?

A. The standardization was proposed upon the initiative of the Bell System and the standardization-well, in fact, before the Interstate Commerce Commission had jurisdiction, or, at least, attempted

to enforce jurisdiction-

This extensive and admirable system of ac-Q. (Interrupting.) counts is the outgrowth of the Bell System, and must have been born of the necessity of handling such a large enterprise, is it

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not,—for the convenience of the Company?

A. It is born of the necessity of each company to have the benefit of what is going on in its territory, and the accounts are used in a very large way in determining the efficiency of individual peoply in the organization.

Q. And it is very beneficial in showing the relation of a particular exchange of one particular company with other companies with

which it is associated?

A. That idea that you express would be that perfecting the organization and management by a company which was not so perfect as others

Q. That is, the accounts are used in order to maintain your efficiency. Now, bur treating this now as a local exchange as operated by an independent company, as has been suggested by Mr. Frank in the matter of its finances, all the benefits of the bookkeeping and this system here have no application?

A. I can't conceive of a thing like that. Permit me to say you might as well conceive of Houston being an independent State, sepa-

rated from the State of Texas.

Q. Well, let's see-

A. And isolated with the prairie.

Q. It don't occur to me that a man would have to stimulate his imagination very much to get up a very fair picture of it.

Mr. D. A. Frank: Do you understand that a single long distance line operated by the Company, if they did that, they would have to keep their accounts in accordance with the Interstate Commerce Commission?

881 Mr. Howard: I don't understand that.

(By Mr. Howard:)

Q. You can conceive that an independent owned this exchange entirely separated from the Southwestern System?

A. I can conceive such facts, but even conceding that, I can't con-

ceive of anyone patronizing it.

Q. That dosen't exist anywhere in the United States, -- any such condition as an independent company operating a local exchange without long distance lines?

A. There are some few trying to operate, but they are drying up.

Q. Has the Keystone dried up very much lately?

A. Well, I do not understand that it is progressing.

Q. Let's suggest this, Mr. Blair-Smith; What independent Company in the United States, aside from the New England, patrozines this American Telephone & Telegraph Company in the matter of its engineering service, for which this 41/2% charge is paid?

A. I take it that by an independent company, you mean a non-

controlled company of the Bell System?

Q. Yes, sir. Q. Two,—the Southern New England Telephone Company and the Cincinnati Suburban Bell Telephone Company.

Q. Are either of those what you can call a strictly non-controlled

company?

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A. The American Company owns around 30%, of the capital

stock of those companies.

Q. This company over here at Waco is given out to the world as an Independent Company, isn't it, Mr. Blair-Smith?

A. I am sorroy that I can't tell you; I don't know about it. Q. Then, of all independent companies, those are the only

two which subscribe to this service?

A. You understand that—; well, no, the Kansas City Telephone Company, which has recently been formed by consolidating the properties of the independents in Kansas, and in which the Bell System does not own a controlling interest, has made a contract for the licensee service and pays 4½% just as the other companies do. You understand that has never been offered boradcast to any companies, but it has been provided for and offered to companies which have associated themselves with the System.

Q. Well, in the matter of this contract, in regard to whether they enter into this contract or not, the American Tel. & Tel. Company, as to whether they enter into it, they just tell them: "Here it is,"

do they not?

A. They do not. The contract, I think with this Company and with practically all of the Associated Companies, were entered into before the American Company was the controlling factor from the standpoint of capital stock ownership.

Q. At this time the American Tel. & Tel. Company makes this contract, with two exceptions, with companies that are controlled

A. Three exceptions that I mentioned. Q. Isn't that other one now controlled by the Bell System?

A. Is it not. It is a consolidation of the property, but none of the voting, or a very small part of of the voting stock is owned within the Bell System,—the American Company dosen't own that.

Q. Well then, with three exceptions, those contracts are

made entirely with companies controlled by the American 883

Telephone & Telegraph Company?

A. These contracts, you understand, are all long duration. were made, I think, back in the 80's and they have held down to the present day; they were made at a time when, I think, the companies that made them were absolutely independent.

Q. Made for how long?

A. They are perpetual contracts, I think.

Q. Made in perpetuity?

A. I think so,—they are permanent contracts.

Q. Are they renewed at any time?

Mr. Frank: No.

Q. Mr. Blair-Smith, you were asked a while ago about making your money out of the reserve, and you said you would have to have a reserve, and you said you would have to have a return, which has been estimated here by the Company's witnesses, or testified to by the Company's witnesses, that after putting on the highest rate that they think the traffic will bear and providing for this reserve of between 5% and 6% in the operating expenses, that it will show a return of something like \$52,000.00, or a fraction of 1%. How would you square that sort of a proposition up with good financing and good management of a public utility?

A. I don't like to express an opinion on something I haven't ex-

amined and studied.

Q. Well, you have qualified here as a financier, haven't you, Mr. Blair-Smith; and as a man who keeps abreast with all financial things that in anyway relate to or throw light upon the industry that he is connected with?

A. I am not sure that I have qualified to that,—I am in touch—

Q. (Interrupting.) Well, you have given us here a very ulluminating and interesting statement concerning your activities, and now, I am just asking you as a man up on these things, how you can square that proposition up with good management and good financing?

A. Are you telling me it exists?Q. Yes, I am telling you it exists.

A. I know that this is a fact,—that there are sections of the United States which do not pay operating expenses; they are connected with sections that do pay operating expenses. You must take the industry as a whole, you must recognize, probably, a State as a

whole--

Q. (Interrupting.) Well, let me amplify that. The evidence further shows that this is a very energetic and growing city, almost a veritable paradise,—heavenly Houston. The records show that the people are very thoroughly educated to the use of telephone service; that the telephone service is probably above the average in the use of it, and by putting on the highest rate that you say the traffic will bear, regardless of regulation, that it will pay a return of less than 1%. What's the fault with it?

Mr. D. A. Frank: Who testified to that, Mr. Howard?

Mr. Powell: I don't remember whether he said 1% or not.
Mr. Howard: It was \$52,000.00; it was less than 1%. I am asking him, as a man connected with the business and active

in the financial world, and I would like to have his views on it. Something is wrong and I would like to know what it is.

Mr. D. A. Frank: You know what is wrong, and I know it too.
A. I don't know. I don't like to express an opinion, as I say, in case of that kind without seeing the proposition in writing.

Redirect examination.

Questions by Mr. D. A. Frank:

Q. Mr. Blair-Smith, you were asked about the money that the American Company furnished to the Associated Companies during the time of the panie, and also during this war time. Those were the times when these financial relations are of the most importance to the Associated Companies, are they not?

A. I think the financial relations are important at all times, and,

of course, especially important at such times as that.

Q. In Mr. Scott's Exhibit No. 8, introduced in this case, the witness for the plaintiff set out the capital stock by years, from 1883, at which time the capital stock was \$2,000,000.00, up to October 31st, 1919, at which time it was \$34,000,000.00; then set out by years, on the same exhibit, the amount of notes and bills payable, showing notes ranging from \$12,000.00 for one year to as high as \$4,381,000.00 in one year, and showing that on October 31st, 1919, there was outstanding \$1,073,463.91 of notes and bills payable. The first note—the first amount of these notes outstanding, of

\$12,000.00, was in the year 1890, and with the exception of just a few years there were—well, without exception,—yes, with the exception of 1898 and 1917, with the exception of those two years there was an amount due at the end of the year by the Southwestern Telegraph & Telephone Company, indicating that there was some financing in each one of those years. Now, would it have been possible for an independent company, without some sort of financial arrangement, to have been financed in just that way by having outstanding at various times notes and bills which were, from year to

year, taken up by the issuance of stock?

A. I think that the difficulty would have been, not in borrowing some money on short time, but in having the protection for that money, that is, in the nature of capital stock outstanding. I think one of the benefits,—one of the great benefits to the Southwestern Company has been the fact that the American Company has been willing to accept stock at par in exchange for notes, the stock paying a very low rate of retuen. Of course, the more stock fully paid that a company has outstanding, the more protection a lender has for his money, and the benefits to the Sout western Company, as I say, has been in the fact that it has always had a very much larger amount of capital stock back of the loans.

Q. The same witness, A. E. Scott, in Exhibit No. 9, showed that from 1883 to 1919 the average dividends paid by the Southwestern Company was 5.36%. I believe you have stated that the money that was put into the Southwestern Company by the American Telephone

& Telegraph Company in the form of loans for notes, and afterwards taken up in the form of stock, has cost the American Telephone & Telegraph Company more than 6%?

A. Yes.

Q. So that from an investment standpoint, the American Telephone & Telegraph Company has actually sustained a loss in these transactions?

A. It has received in return less than the amount paid in money

for it.

Q. Now, then, counting the $4\frac{1}{2}\%$ payment, do you know what that amount is per annum now, the $4\frac{1}{2}\%$ payment on behalf of Houston?

A. I do not know exactly.

Q. The testimony shows that something like \$40,000.00,—\$43,-000.00, and approximately 27,000 stations in the city of Houston, making something less than \$2.00 per station, charged. Has that been figured out exactly?

A. About \$1.50 per station.

Q. About \$1.50 a station. The testimony of one of the witnesses in the case is that the instrument service alone is worth something like \$1.00 per station,—may be a little more than \$1.00 per station, but count it \$1.00 per station,—it would leave about 50 cents a station for all the other services, including financing, accounting, engineering, legal expenses and advisory and various other services rendered by the American Company or in amount something like \$16,000.00. Does that indicate to your mind that the American Company is getting a secret dividend from the 4½ % payment?

A. It is not.

Q. Which has the best of the bargain of these companies who are said to be dealing at arms length—the Southwestern

Company or the American Company?

A. My opinion is that the Southwestern Company should not get such an arrangement with any other Company in the world,—the benefits to the Southwestern Company are far greater than the outlay and the cost to it.

Q. You testified that at one time it was not difficult to sell 6% bonds. Could any company, like a company in Houston, finance

itself merely by the sale of 6% bonds?

A. I don't think it could have kept pace with the growth of the community by the sale of bonds. There is a limit to the sale of bonds; the more bonds that you try to sell, the greater the amount of capital stock that has been outstanding. I might give, as an illustration, this fact, that the American Company itself has found that in financing, it is necessary to maintain a relationship between capital stock outstanding and bonded debt; the capital stock must always be far in excess of the amount of the bonded debt in order to secure money at reasonable rates. When a bonded debt gets up to an amount equal to the amount of the capital stock, you are getting on dangerous ground.

Q. The evidence in this case is that the payment of the 41/2%

for license contract is about \$43,000.00 per year; the evidence also shows that the book cost of the property in the city of Houston is something like \$4,800,000.00; the reproduction new, less depreciation, according to the testimony of three witnesses who have testified on that, ranges from six -nd a half to eight million dollars. On this

basis, if the entire payment for the $4\frac{1}{2}\%$ services were considered dividends, it would not be much over $\frac{1}{2}$ of 1% per

annum, would it?

A. One-half of one per cent.

Q. Do you know what was the highest amount over paid under the $4\frac{1}{2}\%$ arrangement, per station, for this service by any company in the United States?

A. You speak of the 4½% arrangement?
Q. Well, I mean under the license contract.

Q. Well, I mean under the license contract.
A. Oh! in old days it used to be somewhere around \$5.00 per station.

Q. Wasn't it \$14.00?

A. Seven dollars per telephone.

Q. And that has been reduced from year to year until now, in Houston, it is something like \$1.50 per station?

A. That's true.

Q. Under the Interstate Commerce Commission's-

A. (Interrupting.) Those reductions have all been made volun-

tarily.

Q. If the Houston plant were owned independently by an independent company and was connected with any long distance lines extending out of the State, would any inter-state business originating in this exchange—state whether or not, under the rules of the Interstate Commerce Commission, its accounts would have to be kept in accordance with the Interstate Commerce Commission's regulations.

A. Those conditions would require, in accordance with the Interstate Commerce Commission's rules, that the Commission would have

jurisdiction over its accounts.

Q. And state whether or not that means that the Company would have to keep its books in accordance with those rules, and could not keep its books in accordance with those rules, and could not keep its books in any other way?

A. That is true.

Q. Do you know of any plant in the United States, or anywhere else, the size of the plant in the city of Houston, with 27,000 stations, that has no long distance connections?

A. I do not.

Q. Now, you have testified that there are only three independent companies, or companies, not controlled by the American Company which use the license agreement under which they pay 4½% out of certain of their gross receipts. Do you know whether or not any other companies would like to have this arrangement?

A. Only by hearsay.

Mr. Howard: Don't stop on a little thing like that.

(By Mr. D. A. Frank:)

Q. Give Mr. Howard the benefit of that, Mr. Blair-Smith.

A. Quite a number of companies would like very much to come

in under that.

Q. Now, counsel has stated to you that some witness testified here that all the traffic would bear would only run 1%. That is a dofference of opinion as to whether or not the witness said anything like that, but if it was stated to you that the city of Houston were a growing city and that the people were used to telephone service and that they were able to pay for telephone service, would you accept readily, without investigation, the statement that the property

here wouldn't pay and was unable to earn more than 1%?

891 A. No, I would not.

Mr. Howard: Do you withdraw that testimony, Mr. Frank,-the testimony about it?

Mr. D. A. Frank: No, we don't withdraw any testimony. Mr. Powell: I think a fellow named Baker testified to that.

(By Mr. D. A. Frank:)

Q. Now, Mr. Blair-Smith, with reference to the rate of interest in 1916. The times have changed considerably sonce 1916, haven't they?

A. Very considerably.

Q. And it is considerably harder to get money now than it was at that time?

A. Money is tighter now than I have seen it during the financial

side of my life.

Q. Is it of more or less importance to the Southwestern Company that it retain its connection with the American Company on account of its financial service now than it used to be?

A. All of its services,—financial and otherwise. I think that the Southwestern Company would find it very difficult to finance itself

individually always.

Q. Well, what—are the rates of return on business property and on loans and on stocks, and on all other characters of investments in New York just the same as they are in Houston?

in New York just the same as they are in Houston?

A. Why, I haven't made a study of the Houston Market, but as Houston goes to New York for money, I presume it is easier in New York than in Houston.

Q. Would a man in New York as soon have money on a piece of business property in Houston as in New York?

A. It is customary for every investor to want it where he

can see it.

Q. At the same rate of interest, of course that's understood. Now the interest rates in Houston and Texas are generally higher than they are in the East?

A. I have always understood that that was true.

Q. And that's because of the fact that the money market is far removed from Texas, is it?

A. That's one of the factors.
Q. Mr. Blair-Smith, you testified with reference to the financial services in the case known as the Reed case, didn't you?

 A. Yes, sir.
 Q. That was a case in Chicago in which an attempt was made to discredit this arrangement with the American Company by the Central Union Company?

A. Yes, sir, by the Receivers, not by the Receivers, but by

some stockholders.

Q. You testified in that case, and after a very long trial, the Court in that case approved entirely the 41/2% arrangement, did it not?

A. That's true. I want to correct my statement there that the case was not one by the Receivers, but one by some minority stockholders.

Mr. D. A. Frank: That's all.

Recross-examination.

Questions by Mr. Howard:

Q. (By Mr. Howard:) Mr. Blair-Smith, you haven't undertaken to determine the cost,—what it costs the American Telephone & Telegraph Company to furnish this service to the city of Houston for the year 1919, or in 1918, or any other year?

A. It isn't possible to determine the exact cost to any one particular company, or any particular exchange; the services that are rendered are more general and do not apply to any one particular point,

than they are specific.

Q. Then you are charging here for a form of service which you

say is not susceptible of definite ascertainment of cost?

A. It would only be as overhead expenses that is subject to a

property.

Q. You can't tell what benefit this exchange has, aside from the induction coils, transmitters and receivers,-you can't tell what benefit the Houston Exchange has received from this service,—the value of it, the cost of it to the American Tel. & Tel. Company?

A. It would have to be by apportionment only,-it would have

to be apportioned.

Q. You mean that, regardless of whether they have rendered any service here or not, that you apportion a part of the general charges all over the System?

A. I should say that it would be on the basis of determining what part of the President of the Company's salary should be charged

against the Houston exchange.

Q. Without regard to whether in the year 1919 or 1918 they had rendered any specific service to this exchange? 894

A. I think that there is no doubt of the fact that service has been rendered, but when you say a specific service and take the matter of an actual - and study in connection with this exchange, and only this exchange, you see on this basis that you can't tell just exactly what it costs you to acquire the knowledge that you have, that you used on a visit.

Q. That's what I want to get at, whether you can state what the

cost of this service was to Houston.

A. It isn't possible to do so.

Mr. Howard: That's all.

Redirect examination.

Questions by Mr. D. A. Frank:

Q. You have state that it was worth a great deal more than Houston is paying for it?

A. I said the value was far in excess. Q. The American Company is not making any great amount of money out of this 41/2% arrangement, is it?

A. It is not.

895 LAMAR LYNDON, a witness for the defendant who has been duly sworn, testified as follows:

Direct examination.

Questions by Mr. Howard:

Q. Mr. Lyndon, we have a final exhibit here, which we will introduce as Exhibit No. 13, entitled "License Revenue 1919."

The document was thereupon received in evidence, marked "Defendant's Exhibit No. 13, Witness Lyndon" and is as follows:

License Revenue.

This expense, with the sub-title, "Rights, Privileges and Use of Property, Bell System," amounted to \$43,528 for 1919, which sum represents 41/2 per cent on the total Cross Revenue of the Houston

Exchange.

In consideration of this payment, The American Telegraph & Telephone Company furnishes to the Houston Exchange 26,350 sets of Receivers, Transmitters and Induction Coils. The average value of these is taken as \$2.70 each. The records of the A. T. & T. Co. show that the average cost of these sets, taken over the whole of the United States, is \$2.60 each.

896 This latter figure is found as follows:

The A. T. & T. Co.'s Financial Report for 1918 shows that it owned 7,031,530 telephone sets. Its books show a total cost of This is equivalent to a cost of \$2.57 each.

The annual returns to which the owner of the instruments is entitled is 18 per cent on the cost. This percentage is computed as

follows:

Interest				*							 . ,	. ,							 	*	ķ					× ·		7%
Maintenance	*														*											. ,		3%
Depreciation				0				0									0	0 1										5%
General and	M	isc	el	lla	n	e	ot	18			 		 0	0	0	0					9	۰	۰	9	0		9	3%
																		b										18%

Hence, the annual return per instrument should be 18% of \$2.70, or \$0.486. This annual income for 26,350 instruments is, therefore, \$12,806, or, in round numbers, \$12,900.

Q. Mr. Lyndon, will you please explain that?

A. "This expense, with the sub-title, "Rights, Privileges and Use of Property, Bell System, amounted to \$43,528 for 1919, which sum represents 4½ per cent on the total Gross Revenue of the Houston Exchange.

In consideration of this payment, The American Telegraph & Telephone Company furnishes to the Houston Exchange 26,350 sets of Receivers, Transmitters and Induction Coils. The average value of these is taken as \$2.70 each. The records of the A. T. & T. Co. show that the average cost of these sets, taken over the whole of the United States, is \$2.60 each.

This latter figure is found as follows:

The A. T. & T. Co.'s Financial Report for 1918 shows that it owned 7,031,530 telephone sets. Its books show a total cost of

\$18,088,289. This is equivalent to a cost of \$2.57 each.

The annual returns to which the owner of the instruments is entitled is 18 per cent on the cost. This percentage is computed as follows: Interest 7%, Maintenance 3%, Depreciation 5%, General and Miscellaneous 3%, making a total of 18%. Hence, the annual return per instrument should be 18% of \$2.70, or \$0.486. This annual income for 26,350 instruments, is, therefore, \$12,806, or, in round numbers, \$12,900." That shows the reasonable return that should be paid the American Telephone & Telegraph Company for the property.

Q. Mr. Lyndon, I notice you set these things up, these sets at \$2.60 a set, is that right?

A. \$2.70.

Q. \$2.70. Well, did you hear the testimony of Mr. Kelsey?

He is, I believe, either in the manufacture of them or

898 the repair of them, been engaged in the manufacture of
them, and he told us something about the manufacturing
cost and referred to the fact that while, I suppose that was a little
exaggerated, by way of illustration, that they turned them out like
tacks, the way Henry Ford does a Ford car, that they are manufactured by standard machinery.

A. Of course, it is duplication work.

Q. What do you mean by duplication work?

A. The production of a large number of identical units of any

character of mechanism or pieces or parts.

Q. Yes, to the man's mind that wasn't accustomed to these things, would be rather staggering that they could turn out so many, would it not, to a primitive man if he could be brought back here, in view of this situation, it would look like a staggering thing today?

A. Very probably; it is all in the day's work.

Q. Yes, it is all in the day's work. They just turn them out a good deal like they do tacks or car bolts?

Mr. D. A. Frank: Storage batteries or bands or anything else.

A. Not the individual parts.

Q. Now, explain that to us and tell us how difficult they are of manufacture and to what extent, if any, has my impression been

exaggerated.

- A. Well, it has not been exaggerated at all with respect to manufacture. Of course, the development first of the proper character of design and the development of machinery to turn it out, and the development of factory materials, and the development of raw materials and matters of that kind, they are preliminary steps that must be gone through and are somewhat difficult.
- Q. Wouldn't that same thing, that preliminary work, apply somewhat in the same manner to machinery for turning out tacks or turning out plow bolts?

A. Yes, that was gone through with originally.

Q. You would get that machinery then, and you would manufacture them in quantity and grind them out that way. Of course, things like that, like grinding out those matches and all in a box, they bring them to us so that they can give us one hundred matches for a penny, with a box on it, that required a great deal of preliminary work, did it not?

A. It was developed.

Q. Yes, it was developed and the labor eliminated and kept eliminating by this process of evolving machinery until they got to the point where the individual box, the individual match was infinitesimal, you could not measure its cheapness; now, in a manner at least, that same condition exists in regard to manufacturing these instruments, does it not, or does it?

A. Oh it must; they couldn't turn out the enormour quantities

required in any other way.

Q. Mr. Kelsey said, while engaged in the business or at least in a manner engaged in it, he did not like to give away all the trade secrets, but he said he thought it would not cost more than a dime to manufacture each one; he said there was considerable copper in them and things like that, he would not say they could manufacture them for a dime, and while he didn't state they could be manufactured for twenty-five cents, he said he would hate to say they could not be manufactured for that.

Mr. D. A. Frank (interrupting): Grow on trees?

Q. (continued). No, very cheaply manufactured; well, is there anything about those little things, in the manufacture of them,

that you think should cost over twenty-five cents?

A. I don't know. I would know if I took one apart and found for instance, in the induction coil the exact number of winding and the size of the wire, and, of course, the weight of the wire and the character of the installation and could tell within a few per cent then what it would cost to manufacture them; they are all machine

Q. That is what I was going to ask you: after they are all dropped from the machine, all come out from a spout, I suppose they do in a way come out, they get them from the machinery in a certain

place,-

901 Mr. D. A. Frank (interrupting): Are you getting this witness to swear to something he knows or some dream of vours?

Mr. Howard: I am trying to find out what he knows about the

manufacture of these things.

Mr. D. A. Frank: Why don't you ask him the question instead of telling him then? -

Mr. Howard: I was not telling him; I was simply directing his

mind.

Q. Can that be likened in any way, they are finally directed in this machinery to some-

A. Some discharge point, of course. Q. (Continuing:) Which you might call a spout like an old thrashing machine?

A. It might be the equivalent.

Q. Well then, they come out to a big pile-

Mr. D. A. Frank: Did vou ever see one made Mr. Lyndon?

A. I don't recall the specific coil. I have seen the machine wound coils-

(By Mr. Frank:)

Q. Have you seen a telephone instrument made?

A. I don't know whether I saw one made completely; I have been in the works of the Western Electric Company at Atlanta and seen the work there. 902

Q. Have you ever been in the plant at Hawthorne and seen

them made?

A. I have noter been at Hawthorne.

Mr. D. A. Frank: I think it is absurd to clutter up the record with a lot of stuff, when Mr. Lyndon has never been there.

Q. After they get out of the machine, what other hand work is necessary to the completion of these coils that they sell here to this Company or that they install here for this company?

A. Well, the coils themselves are installed inside the boxes, the

bell boxes, along with the bells and the condenser. You are referring now to the induction coils, I suppose?

Q. Yes.
A. And the boxes of steel are stamped out in numbers and the only thing that is done that requires any hand labor at all is simply the assembling.

Q. Well, in the assembling of them, they do use a little hand labor

in assembling them?

A. Yes, in placing them, in placing the parts in the box.

Mr. D. A. Frank: Mr. Howard thought they grew that way.

903 A. (Continuing:) Well, they ultimately grow that way by assistance. But the part- only, as I understand the contract are furnished by the American Telephone & Telegraph Company, that is they furnish the Transmitter, but they don't furnish the containing box of the desk stand. They furnish the coil, but they don't furnish the metal box in which the coil is placed and they furnish the receiver, but I understand they don't furnish the hard rubber shell that a receiver goes in.

Q. Well, I want to make that clear, I don't think the Master-I don't think these gentlemen for that matter have tried to convey that impression, but when you see this desk stand and then this little box on the wall, it is not, of course, to be implied that the apparatus that the American Telegraph and Telephone Company furnishes this Exchange includes that little box on the wall, the

desk stand or any of that sort of thing.

A. By no means; those sets run in value from anywhere from ten

to fourteen dollars.

Q. Those are different things. You are just speaking of those little manufactured things that they grind out that way?

A. That small portion of those things.

Q. That are shipped down here and then the company that uses them, installs them in those receptacles?

A. I believe it is done by the Western Electric Company; 904 I believe that the installation that they produce—they take these portions and add to them other portions.

Q. Once they deliver to them these little coils and things, the American Telephone and Telegraph Company's responsibility with

them ceases?

A. No, I understand they have to maintain them.

Q. Well, maintain them, but then they are not-they don't set them up in these receptacles?

A. Oh no, they don't set them up and they don't install them. Q. Now, Mr. Lyndon, you, however, have used an item of \$2.60.

A. \$2,70.

Q. That would be equivalent to nearly ninety cents, between eighty five and ninety cents apiece for those little instruments that they grind out that way. Aren't you adding on a pretty considerable lot of overhead when you take the thing from the time they leave the machine until the time they are set up in the Western Electric Company's plant there?

A. I have not attempted to determine the ratio of the cost to this figure of \$2.70.

Q. But to recall now, you just said you had the American Tele-

graph & Telephone Company's books-

A. (Interrupting.) Statement of their value and I have had statements as to the selling price of other companies that manufacture them.

Q. You would not take the American Telegraph & Telephone Company as a witness of the particular buyer in favor of the public, would you, their statement of their cost when they say \$2.70, would you consider that they had put on a reasonable cost at any rate?

A. Yes, I would.

Mr. J. D. Frank: Forty or fifty per cent would be sufficient. Mr. Howard: Well, they might stop at that; I don't know.

Q. At any rate that is all the American Telephone & Telegraph Company set up on their own property?

A. I regard it as ample.

Q. Considering the way in which these things are manufactured, which you have just detailed, wouldn't you consider it much more than that?

A. I would certainly consider there was a profit in that \$2.70 for

the Western Electric Company, there would be no reason-

Q. (Interrupting.) Mr. Lyndon, I asked you this: Is there any reason that suggests itself to your mind or would to any mind familiar—that is not operating the telephone plant, but that is somewhat familiar with the operations and the business methods em-

ployed, would you consider that there were any reasons, good reasons, for not selling these little instruments to this local operating plant other than that they serve the purpose

of camaflouging this 41/2%?

A. I can't see any other purpose. They are purchasable from other manufacturers direct and the lowest quotation I had was, \$3.00. That is during the present year, for those parts. Now, they are, of course, purchasable.

Q. And from some reason or other they have carefully refrained from selling these instruments to this particular plant. They at one time would have sold them to independent plants, would they not?

A. I understand that for a good many years they competed with the standard manufacturers for independent plant business and did sell them to independent plants. That practically ceased, however, sometimes in 1917. I am not sure of the date but I understand that the Western Electric Company has stopped dealing with independent manufacturers.

Mr. D. A. Frank: They can't get enough for the Bell Company, can they?

A. (Continuing:) It is quite probable that that is so. Now, as to selling these parts to this company, why it has not—since the American Telegraph & Telephone Company that owns the Western

Electric Company and owns these transmitters and receivers and coils and owns this company, didn't they, or all combined under the one head, it does not strike me as a question of re-907

fraining from selling something; it is just a decision to do

something.

Q. Yes, they just decided for some purpose of their own, that it is a good idea to set up that as a rental instead of selling-once, it is sold and gone into the property value, it is hard to compute the interest rate on it definitely?

Well, it is the only tangible evidence of something contributed by the American Telegraph & Telephone Company to the

subordinate and local company.

Q. For a consideration of this 41/2% which they extracted from the gross revenues?

A. From the gross revenues.

Q. Now, is that the only tangible thing? Can you think of anything else or is there any other thing that we can put our finger on at all, that the American Telephone & Telegraph Company furnishes to the operating plant, aside from the use of these little instruments?

A. Well, I understand that they have an Engineering Depart-

ment, that will sometimes give advice.

- Q. Well, I am talking of tangible things, something in the way something that we can even measure at all, that we can get an approximation of?
- Mr. D. A. Frank: Consulting Engineering, of course, is not 908 This is a Consulting Engineer on the stand.
- Q. Now, that brings us, Mr. Lyndon, to the General Staff: can you tell us what the General Staff does for the Company here that warrants the expenditure of the balance of this 41/2 %?

A. I don't know.

- Mr. D. A. Frank: The witness doesn't show that he has any knowledge at all.
 - Q. Can you refer us to anybody that does know?

A. I don't know of anybody that does know.
Q. Have you given the subject some thought? You have heard of before and are somewhat familiar with the facts, aren't you?

A. Yes, I have discussed it with several people and in some certain cases I have gotten some very handsome statements about it, but I have never been able to find a tangible thing, except these parts which are furnished and maintained and the fact that Engineering advice is there ready on tap when required, as I understand it.

Q. Well, they have apparently done everything in the way of progress that has been brought about in the Electrical World, since

the Staff was organized, haven't they?

Mr. D. A. Frank: What has the Electrical World got to do 909 with it, Mr. Howard? This is a telephone matter.

Q. (Continuing:) Well, the World of Telephony then, we will narrow the field.

Mr. J. D. Frank: The witness has said that he doesn't know anything about it a number of times.

A. I understand that the common battery multiple board was the work of four gentlemen. I remember McQuarry and Hayes; I have forgotten the other two; and I believe they were all connected with the Bell Company. That goes back to some date that I am not sure about, but I believe it was between 1900 and 1902. It is stated by people who are in a position to know, that the advances which have been made by the independent manufacturers and the independent telephone Engineers. Certainly the most brilliant mind, as far as I know that was ever engaged in telephone work was an independent man and designer. I refer to W. W. Dean.

Mr. D. A. Frank: I never heard of him.

A. (Continuing:) Well, your Engineers ought to know him.

Mr. D. A. Frank: He said he didn't know anything about telephones.

910 A. (Continuing:) I have never said I didn't know anything about the telephone. I said I never operated a plant. I was in conference with Mr. Dean a considerable period about the details of design of telephone parts at the time we were trying to consolidate the independent exchanges many years ago, and which experience in a general way I refer to.

Q. Well, has there been any epoch making invention in the telephone world of late years, and if so, who has brought it about?

A. The only thing that occurs to me now is the Pupin coil, which is an artificial method of inducted loading, that was developed by Prof. Pupin. After he had read what Oliver Heavyside had to say on the subject and that has greatly improved long distance conversation.

Q. In what way does that confer any particular benefit upon this

local exchange?

A. Well, that confers benefit on the local exchange if the telephone tolls be recognized as a part of the income, because it improves the toll service.

Q. Oh yes, that is unquestionable.

A. If it is regarded strictly as a local matter, then the Pupin coil would have no bearing on it.

Q. Well, aren't there a whole lot of very valuable patents that are almost indispensible to the operations of telephones that the 911 Bell system has the exclusive use of on account of this General Staff's many and various investigations and researches?

A. Not a single one; and my basis for that statement without-

Mr. D. A. Frank (interposing): Any experience?

A. (Continuing:) Going through the patent archives of that company is this: that independent companies who are competitors are giving equally as good service as the Bell Company and they are going it at a lower cost of operation. Now, a patent can only confer one of two benefits: an improved service or a reduced cost.

is nothing else that a patent can do. That being the case, I reason that there can exist nothing which would give the Bell Company a benefit, because it certainly does not show a reduced cost of operations in any of the exchanges that I know of and it does not show any better service even in the transmission of articulate feet or in the

handling of—the manuel handling of connections.

Q. All right, so much for the patents, Mr. Lyndon. say if they want to put in a little extension to the plant down here, of course, they would not want to intrust it to anybody in Texas, or in the south or west or east or anywhere except this New York Staff. Would that be absolutely indispensible would you think that they should get it looked over by the New York Staff, before 912 they would do this work?

A. That I could not say; it depends entirely on the competence of their local and district Engineers.

Q. Can you give us some estimate of how much ability and experience and technical knowledge a local man or any other man ought to have in order to determine something about where an extension should go or about these problems of telephone engineering?

Mr. D. A. Frank: I object to the question, when the witness is not competent himself. How in the world he could tell what the requirements would be for the local man to be competent, it is impossible for him to say. He has never operated a telephone exchange in his life, says he has never built one, never operated one, never maintained one; now, for him to come along and tell what the qualifications are of a man that does know, looks absurd on the face of it.

Mr. Howard: It might possibly be that there is this fallacy in your proposition, that you are arrogating to yourself the ability to determine his competency. Now, it is possible that ordinary minds might differ with you on this subject. For that reason I would just rather have it go in and let the Master determine it, if you don't

913 Mr. D. A. Frank: If you think as a lawyer, he is able to pass upon the competency of a local man as an Engineer,

why all right.

Q. Well, I would rather go ahead. How about that, Mr. Lyndon? Q. Well, it is my own view that a local man who is competent and we assume that the Company would not put other than a competent man in charge, because they have a large quantity of big material to draw from, would know more about a local requirement than somebody who might come from the outside. That view is partly founded upon my own experience and practice. I have gone to various places at certain times to determine certain things for different corporations and I have found that in every case that the local conditions-I had to obtain from the local men that knew most about them and had to draw conclusions principally from the man on the ground with reference to the local condition.

Mr. D. A. Frank: A switchboard is a local condition?

A. (Continuing:) The extensions of lines are local conditions; their desirability and direction are local conditions; the extension of a switchboard is all in the days work. Those things are made in multiples, they are made in units, panels, and ready to be

added to, and assuming that the multiple jacks are not all 914 filled up.

Q. Mr. Lyndon, to hurry along over this thing, they have come down here and told us that they had standardized accounts and the outstanding facts and benefits that they cite us to, is that although this is a local exchange here and not engaged in interstate traffic, that they maintain up there at Washington, a representative that takes care of the matters before the Interstate Commerce Commission. Can you tell us and point out to us just where that is so beneficial to the local exchange?

A. I don't understand it at all. The Interstate Commerce Commission has set forth a method of accounting for telephone systems that it obtained some assistance from the Bell Company for, is very probable; that it obtained some assistance from some of the independent companies is a fair assumption. In fact, it would be a regret-able thing if the Interstate Commerce Commission would adopt an accounting that was based solely on the methods of one company. So we assume that this was temporary advice voluntarily given and for the help and guidance of the Government Commission.

Q. But what has a local exchange in the first place to do with the Interstate Commerce Commission, what help and benefit could it be

up there? 915 A. The Commission has set out a method of accounting, which it recommends and which is an excellent guide to follow.

(By Mr. D. A. Frank:)

Q. You say it recommends it?

A. To local companies.

(By Mr. Howard:)

Q. It is required in Interstate traffic is it?

A. Yes. I am speaking of local companies. Q. Now, Mr. Lyndon, they also pointed out here, I believe where some gentleman pointed out in these offices a process of manifolding; that is nothing that is very complicated or new or startling about that is there? Manifolding processes are pretting generally recognized all over the country aren't they, including Texas?

A. I am not quite clear as to what he did.

Q. Well, he caused some very new process of inserting carbon sheets, I believe, in the paper; I can't get it in very great detail; but the result of it was they made a great many sheets where they hadn't made that many before.

A. I don't recognize the process Judge. Is it a matter of produc-

tion of something else?

Q. Well, now they finally pointed out a thing here that I didn't

care to go into, they had discovered or somebody discovered that there was a bug, that creeps in the cables and they had the bug in the bottle and they brought it down here to show us. Now, what particular benefit is that, or can you compute it in any way in 916

dollars and cents so that we can know what we are paying

for?

Mr. D. A. Frank: He didn't see the bug.

Q. (Continuing:) Have you heard about that bug?

A. Not until now. There was one that was discovered in Germany that ate steel rails. That was done sixty years ago. It did actually eat steel rails. It was made of little bits of-

Q. (Interrupting.) You knew of that before this hearing,

didn't you?

A. Yes and it was made of little bits of rubber and it had some nitric acid in it and they would put the steel filings in the bottle and prod this bug and he would eat it. That was produced by a number of students at Berlin, one of whom was a former President of the Society of Engineers. In his reminiscences in his old age he told about the prodding of this bug and how it startled all the scientists of Germany, etc. I assume that this bug was born and grew, what does it do, eat the lead?

Q. It eats the lead and gets down among the wires. I don't

know who discovered it, the department of entymology?

A. Judge, I am incompetent, it takes an entymologist to answer

the question and I can't qualify as one either.

Q. Now, Mr. Lyndon, they have piled up here on us any number of Exhibits and I am not going to produce those and have you go over them in detail. I have in a general way, sketched 917 what the General Staff claims to do and I will ask you in

all seriousness whether there is anything that you can as an Engineer, familiar with the valuation of properties and more or less coming in contact with the operation of them, whether there is anything that you can think of that justifies this charge of four and a half per cent?

Mr. D. A. Frank: Well, without experience, put that in there,

Mr. Stenographer.

Q. (Continuing:) Well, I think you have got it in there about

fourteen times already.

A. Well, before we admit it, let's find out what kind of experience.

Mr. D. A. Frank: I am talking about operation of the telephone plants.

A. Without experience in the operation of the telephone plant. Q. I believe, you said you had been making too much money and been earning too much money to take part in the operation of a telephone plant?

A. Partly that, and to be fair judge, I never had one offered me. I can't see any possible reason for the continuance of that payment. I believe there was a time when that payment was justified. I be-

lieve back in the early days when the telephone was absolutely new in the art, there was nothing standard, when every ex-918 change that was put up was practically different from the preceding one and an enormous amount of experimentation was necessary, because it is largely a developed art, that that 41/2% was then warranted; besides the gross income was small so that the 41/2% did not result in a very considerable quantity of money from each telephone exchange. But that period passed long ago and the development in the art appears to have—certainly in local exchange work, appears to have come almost to a stop. Somewhere in 1906 or 1907. Those are not exact dates but around twelve to fourteen years ago. We have substantially the system and the same instruments today we had then.

Mr. D. A. Frank: In spite of the automatic?

A. (Continuing:) I am now, referring strictly and only to the manuel system, because that is the only thing here under discussion. You removed the automatic. So that the continuance of that payment after that period had been passed appears to my mind unjustified except that part of it, which is entire rental and maintenance payment for the parts furnished and by reason of the furnishing of these parts the company does not have to make that much investment, that, of course, should be paid, but it should be based on the cost of these parts and the proper interest on them and the main-

tenance and not four and a half per cent of the gross re-

919 turns.

Q. Now you have spoken about management and still I believe you say you have never operated a telephone exchange and never had such a position offered to you. You have had some experience in the observation of the management of industry and utility plants and other business enterprises, have you not?

A. Yes.

Q. In the course of your life. Mr. Lyndon, from that observation and that experience, you take any business where there is no local owner, where the manager has no concern except a part of the machine—be he ever so good a man and efficient and intelligent, that in his management he is handicapped at all times by a foreign policy that loads his business, he is trying to manage, and put on Engineering expenses here and overhead there and issued bulletins from the Central Office and instructions and the thing is largely governed by an interlocking machine, in the nature of things can that same business interest and motive be involved that is involved where the industry is being operated by its owner and those closely associated and affiliated with it?

Mr. D. A. Frank: All of which is pure argument, of course.

920 A. Judge, that is not even an Expert question. well known general fact, known to everybody I have known

about that where the boss is on the job things happen.

Q. Now, you take this for instance, it is illustrated here in this travelling expense, you get a travelling expense here of fifteen or sixteen dollars a station and we go to other plants, as large as this

plant, and we find when it is locally managed and independently built, these supervision and loading charges and General Staff and allocated charges and all these things that we find, the traffic expenses have been reduced-find it cut in two, that could grow largely out of the fact that the local manager is the same in his ideas of investigating plans and protecting economies and things of that

character, could it not?

A. It might be that some of it could come from that, could proceed from that reason. A great many general costs that this company has are unavoidable for this company. It owns a number of companies and has to make an accounting to headquarters, to its final owner, the A. T. & T. and that calls for an amount of accounting and bookkeeping that would not be necessary or required of a local company.

Q. Yes.

A. In other words, the local company has got to bear some portion of the burden which comes from the fact that it is part of a large system, instead of being locally, or to itself, and in that, that is obviously true. And this local exchange for instance, the

921 manager of one exchange is trying to get along, effect economies and some extraordinary expense happens over in San Antonio, they might put on a big rate hearing over there and cost them one hundred and fifty or two hundred thousand dollars and then they allocate fifteen or twenty or twenty-five per cent of that cost to another exchange, it can't help but have a depressing effect upon the local manager, can it?

A. I should think so, if he wanted to make a good showing as

every local manager wants to do.

Q. And when every man confronted with all these things, the thing taken beyond his control and his economy, he finds the economies perfected here and a little improvement in traffic here and a commercial expense there and gets along and gets interested in his work and is energetic and trying to use his best judgment upon the proposition, and then he is hit with a big bunch of allocated expense that makes that look like a nickel, why he just naturally begins to,—it has a depressing effect on him naturally.

Mr. D. A. Frank: Now, if your Honor, please-

The Master (interrupting): It seems to be somewhat argumentative.

Mr. Howard: It might be slightly, Judge, and I will not continue it.

922 J. C. Kelsey, a witness for Defendant, was recalled and testified as follows:

Direct examination.

Questions by Mr. Howard:

Q. Now, Mr. Kelsey, you have heard of this 41/2 % license revenue of the American Tel. & Tel. Company? 31 - 219

A. There has been some discussion of it.

- Q. Mr. Kelsey, I wish you would go into detail and tell us some of the great and lasting benefits that this Company and other Associated Companies derive from the services of the General Staff.
- Mr. D. A. Frank: We object to his testifying about it, because he shows that he has disallowed it entirely.

The Master: Objection overruled.

(By Mr. Howard:)

Q. Well, tell us some of them, some of the advantages to the Southwestern Telegraph & Telephone Company, and the Houston local exchange in particular, Mr. Kelsey, that we get from this General Staff.

A. The General Staff is a clearing house,—a great deal like a clearing house in a city, in a banking institution,—merely a clearing house. I would not trade the Staff of the Southwestern,—the

Staff that the Southwestern has for the General Staff of the 923 American Telephone & Telegraph Company. These boys' ancestors didn't get room in the Mayflower, and therefore

cannot belong to the General Staff.

Q. Do you mean to say that they do not get any benefits?

A. I doubt if they have ever gotten any. I would rather have this organization right here than all of the General Staff put together. I have been watching the so-called General Staff for years and—

Q. (Interrupting.) Well, but Mr. Kelsey they do a great deal of work for us in standardizing our accounts, don't they?

A. The independent telephone system is in that standardization

just as well.

Q. All right, Mr. Kelsey, you say you haven't been able to discover any benefits of the General Staff?

A. I repeat, it's a clearing house and a very logical thing for anybody to do. Everybody knows of standardizing accounts.

Q. Your idea is that this General Staff is largely employed to look after things like that?

A. No, it has different duties.

Q. Tell us about some of the real practical engineering work that they do. Now, when any of the companies want to make any extensions, of course, they have to have some member of the General Staff to tell them how to do it?

A. Not on your life. That's a mistake. There are more men

here who can do this work better than they can.

Q. Right here in Houston?

A. Yes, right in this room; they know more about local conditions and are able to handle any of these problems themselves,—and a paper with reference to the matter gotten out in New York isn't worth the paper it is written on,—it isn't referred to New York.

Q. Mr. Hoag wouldn't know anything about an extension, would

he?

A. He certainly would, and the advice of the General Staff would not be required.

Q. Suppose he did it, do you suppose the telephone would work?

A. It would work beautifully; I would rather have him do it than anybody in New York.

Q. And do you believe that he could get it up economically?

A. Absolutely. It is very natural for this Company to have a clearing house to take care of these problems, because they own this

business and they ought to watch their own business.

Q. You don't mean to say that where they have got companies all over the United States, and in carrying on their Inter-state Commerce Commission business, and if they have to have representation before the Inter-state Commerce Commission that it doesn't help this Houston exchange engaged in the local traffic to have that man up there representing the companies before the Inter-state Commerce Commission?

A. I don't know of anything that would be of any benefit to them. We have had to meet the Inter-state Commerce Commission and have had attorneys there representing us

and doing the work just as Mr. Frank is here.

Q. But, Mr. Kelsey, where is there any benefit? Can't you tell us about the benefits to be derived from standardizing these accounts and getting up this system of bookkeeping that Mr. Blair-Smith has evolved?

A. They naturally should keep books and bring the accounting

down to where it can be understood.

Q. Don't the General Staff do any of that?

A. I guess not. They may have attended some of the meetings, but I think the best bookkeepers in the country have attended those meetings,—for instance, Mr. Bennett, of the Kansas City Home.

Q. What meetings are you referring to?

A. All of these meetings with the Inter-state Commerce Commission where this accounting was worked out; the Independent Telephone Association,—our men were always there at these accounting meetings.

Q. Well, the local companies are able to keep their books, are

thev?

A. They always have been, but it is a fine thing and they have a wonderful system of bookkeeping worked out as they should have.
Q. They have up-to-date methods of keeping their books?

A. I think the books are kept wonderfully well, and then they analyze themselves. Some of them have to have a special building to keep their records, covering six blocks—

Q. (Interrupting.) Just the Bell Companies?

A. All of them. That is one danger we are running into today,—too many records.

Q. A danger that who is running in?

A. It undertakes to make it so excessively prohibitive that they actually can't use it.

Q. Your idea is that as a result of all these added charges in

maintaining all these theoretical things, and paying high prices for them, they are making the service unnecessarily expensive?

A. Are you referring to the General Staff? Q. Yes.

A. They don't get any abnormal salaries; they receive very ordinary salaries, and the expense of running the whole service department isn't very many thousand dollars.
Q. But then it costs a good deal?

A. Oh, yes! to keep a lot of gentlemen on the pay rolls whose uncles are influential stockholders. They have got an elegant General Staff and get along beautifully. I have heard that story of the General Staff nine times.

Q. Who have you heard that story from?

A. Mr. Rhodes and his attorneys and the testimony hasn't changed a line since we began.

Q. Are you familiar with Mr. Rhodes' testimony?

A. I think I am.

Q. What particular thing has Mr. Rhodes pointed out--I 927 will ask you as a practical man, that is beneficial to the local exchange here, either by promoting this service and bringing it up to a higher degree of efficiency and working for economies whereby the service can be-

A. (Interrupting.) The only thing Mr. Rhodes hasn't claimed

is that the General Staff discovered America.

Q. But then it gets a lot of patents?

A. Yes, the Kellogg Switch Board & Yes, the Kellogg Switch Board & Supply Company started with 200 fundamental patents; anybody can get a patent and they are very often a liability on the market, but then patents are fine things and sometimes are an asset.

Q. Hasn't the Bell System in the Houston exchange got devices

here that the ordinary independent companies can't use?

A. I don't know. It may be that they have the Pupin coil here.

Q. I mean in the local telephone service?

A. Nothing that is locally used that has got any patent rights

whatever.

Q. Well, they must have given them the exclusive control of some devices that the independent companies would like to have to make the service good?

A. They have the so-called Pupin coil that is put on long lines.
Q. I want to find something in the local service.

A. Oh, that is used some times in traffic circuits, but the independent companies use them now where they are consolidated and taken over, or partly taken over. This thing is getting to 928

be a very complex proposition.

Q. What is the particular benefit of the Pupin coil? A. It gives transmission over long distance lines, but that was started by Oliver Harvey even before the Civil War.

Q. Didn't the General Staff discover that? A. Oh, yes, they discovered it all right.

Q. Well, who discovered that?

A. Oliver Harvey worked the whole thing out before the telephone—

Q. (Interrupting.) And before the General Staff was created?
A. It is nothing in the world but a force to control self-induction, and the capacity of the line is naturally,—that is, the capacity of the line for self-induction,—

Q. And they can, as I understand you, run the local exchange

without those?

A. Very well indeed.

Q. And are doing it in certain parts of the country?

A. All over.

Q. Well, what other patents are there that the General Staff has evolved and given to these companies?

A. I don't know. They claim the automatic too, but they bought

the automatic for \$4,000,000.00.

Q. Didn't they evolve the automatic?

A. They made fun of it until they found out that it was a fine thing, and then they had to buy it.

Q. Didn't some engineer on the General Staff discover that?

A. No, the first automatic man is in this building, but he never belonged to the General Staff.

Q. What great and really remarkable invention has the General Staff made? Just tell us of a few of those, will you?—not mere little petty inventions, but something grand and epoch mak-

ing in telephony.

929

A. I think that during the War they developed a larger cable, but they only did those things which they should do for themselves. They used a larger cable, and Rhodes talked a long while about a new sort of paper around the cable. They couldn't get any paper standard and the Rogan people did that too. It's a curious thing that they always do it first.

Q. Who did it first?

A. These independent companies and Q. (Interrupting.) They adopted that?

A. Yes, sir.

Q. As something practical?

A. Yes, sir.

930

Q. You never knew how to wrap wire in paper before?

A. Well, the Western Electric Company—Mr. Patterson did that and gave up his life to it,—the inventor of the cable proposition.

Q. Didn't the General Staff do that?

A. Oh, you never heard of the General Staff at that time. There was a group of fellows in Boston,—Arnold, Wells and Thompson, who called themselves some sort of staff, but they were "some" staff.

This General Staff is a creation of the American Telephone & Telegraph Company when they succeeded to the American

Bell Telephone Company.

Q. I wish you would point out to us one of the specific things that this General Staff does for the local exchange here that the local exchange couldn't get and wouldn't have if it was operating independent of the American Tel. & Tel. Company?

A. I don't know a thing that this bunch of boys couldn't handle and handle as well as the General Staff.

Q. You know of nothing here at all that the General Staff has

done that makes the service better than it would have been?

A. The service isn't anywhere as good as it used to be before they had the General Staff.

Q. What is the cause of that?

A. I don't know. The Bell Company of Missouri at one time was noted all around the world for its quick service, and I have never seen any service like that.

Q. Have any of these local exchanges any man in charge that

has got any particular money invested in it?

A. No, that's the trouble,—absentee landlordism. That is the whole trouble of the organization, and instead of working for the organization they are working for more pay which is necessary.

Q. Why, Mr. Kelsey, down here in this Coast Country there is a beetle that drills through the lead casings and gets into the

931 wire.

A. Yes, I have heard all about that bug.

Q. Well, what work would have been done in regard to that if it

hadn't been for the General Staff?

- A. That bug started in Australia before the World's Fair and Mr. John Heskott told us all about that bug before the St. Louis World's Fair.
 - Q. Well, the General Staff didn't discover the bug?

A. No, it came from Australia.

Q. It is an Australian bug?

A. Yes.

Mr. D. A. Frank: May be the General Staff brought the bug over. A. No, but they probably did introduce the English sparrow.

(By Mr. Howard:)

Q. Didn't the General Staff find this great drawback to the telephone industry along the Southern Coast Country and overcome it?

A. Oh, yes, I suppose they did-no more than these fellows that

found the hole and had to fix it up.

Q. Well, ain't it generally recognized then as being responsible for overcoming the bug?

A. No, that bug is absolutely an importation; it came from

Australia.

Q. Well, somebody up there at the American's General Staff discovered how to put more carbons in a typerwiter, or something like that; wasn't that of great benefit to the local exchange,—made

932 more copies than they used to make?

A. Oh, I haven't any idea.

Q. Other people know how to us manifold machines as well as the American Staff?

A. I think we used to have them and do have them yet; the Elliott-Fisher people seem to know how to get along with that.

Q. Now, Mr. Kelsey, in some engineering problems which they have which come up in an exchange like this, there must be some

knowledge that they get from New York that we couldn't get down here,—in constructing a plant and laying out a plant. There is some advice that they have to get from New York and have to get

from Mr. Carty or some of those other engineers there?

A. I don't think John J. could do it. It has been so long since he tried it, and these boys here can handle these problems all by themselves much better and don't need any help, and I have no doubt but that the Southwestern has boys who have more ideas than are ever worked out in New York.

Q. Their experts in the Commercial Department come down here and tell these gentlemen where they are making their mistakes,

don't they?

A. That's the easiest thing in the world—to tell any man where he makes mistakes. That's the softest job a man can have.

933 This General Staff is a remarkable institution and—

Mr. D. A. Frank (interrupting): We agree with Mr. Kelsey on that, your Honor.

(By Mr. Howard:)

Q. Then, as I understand it from your experience and knowledge of the telephone industry, this thing about the services rendered in the line of engineering, accounting, commercial advice and legal advice—why, they have got some lawyers up there in New York that tell them——

A. (Interrupting.) Well, they haven't got a lawyer as good as

Mr. Frank.

Mr. D. A. Frank: I want the record to show that I thank Mr. Kelsey for the compliment.

A. I mean it, too.

(Mr. Howard:)

Q. Isn't it a fact that telephone men with the knowledge and experience in this industry—I am speaking seriously now, Mr. Kelsey, and would like to know if there is any one thing in the field of engineering, commercial advice, legal advice, standardizing accounting methods, keeping of books and research and experimental work that is of any benefit to the—practical benefit to the operation of this local exchange, and that can—that tends to promote, to build up its service,—build it up above that of a well

managed independent company, or that tends to lessen the

934 expense of the service?

A. No, it does not tend to lessen the expense of the service, but adds to it. They tried to bring some testimony here in the last case where a single cord saved \$2.00, in the last two years, after about a two days' examination of one of their engineers.

Q. They have got a cord here, and what is there about it that—
A. (Interrupting.) It is the same tinsel cord that was practically in use in 1898. That cord was used in the Northwestern switch-

board in 1899 by Mr. McBurtie. I kept a record there on my trunk "A" board and cut the cords off myself. That cord was evolved by the Western Electric Company boys,-making those cords and testing them, and they have a wonderful organization. This General Staff, I tell you, is composed of nice college graduates, and most of those boys' ancestors managed to hit that boat that landed at Plymouth Rock.

Q. What about the Western Electric Staff?
A. Between the two staffs, I think the Western Electric staff is the better of the two. I know them all, and the most of them are graduates of Perdue University and are now in the Western Electric General Staff: they secure the best men that are to be had, and I wouldn't trade the Western Electric Staff for the General Staff.

Q. Mr. Kelsev, you are a graduate electrical engineer, are you

not?

A. Yes. 935

Q. And you have been professor of-

A. (Interrupting.) Yes, that will do.

Q. —Electricity in a reputable university?
A. Yes.
Q. Perdue University, of Indiana?

A. Yes, and I think the Southwestern knows Mr. J. G. Grain, I

am pretty sure that they do, and-

Q. (Interrupting.) And you are conversant with the scientific world as to patents with reference to electricity as applied to the art of telephony?

A. Yes.

Q. What world figures are employed on this American Staff?

A. What what? Q. What world figures?

A. None.

Q. Have they no men on that Staff that stand out in the scientific world as men of preeminence in the way of ability?

A. Not preeminent ability, but very fine fellows.

Q. Well, this man Carty is a good man?

A. John J. is right there and is an average engineer; Mr. Gherardi is a good man, and Mr. Stephens.

Q. Where did he graduate?

A. Mr. Gherardi I think is a graduate of Columbia, and I don't know where Carty came from,-the university of experience. I would imagine.

Q. How many of these men on that Staff, if you mention 936 them, are there that would be identified at once by men fairly

conversant with the scientific world?

A. Charley Scrivener was really, I think, the best known man the Western Electric Company ever had and the best known as a scientist among the world's thinkers. He made the mistake of letting the automatic go by and they succeeded him by another gentleman, a professor from the Massachusetts Institute of Technology, Mr. Jewett, As a matter of fact the organization is mediocre and doesn't measure at all up to the standard set by the Western Electric organization.

Q. As a matter of fact, in the engineering field, commercial field, accounting field, and in the handling of traffic, they can render or do render no services that can not be as well performed by any reasonably well equipped engineer locally?

A. That's true.

Q. There is one tangible thing that we can put our fingers on, and I want to analyze that a little, and that relates to the induction coils, transmitters and receivers. You stated that these things could be produced for \$2.00 a set?

A. Well, \$2.00 for each piece,—\$2.00 for the transmitter and \$2.00 for the receiver, and I think a dollar and a half for the induc-

tion coil. I think that's what Mr. Wilson put in in Columbus, and I don't remember the old price.

Q. How much do these things cost?

A. Well, we made the transmitters for \$1.60, the receivers \$1.00 and the induction coils, I believe were 40 cents, but then the prices have gone up. Rubber and shells have advanced and the price of cords has advanced. There is nothing to the transmitter, receiver or induction coils,—they are very simple devices.

Q. Well, do you know what a set costs?

A. They claim now it costs \$5.50; the old price was \$3.00.

Q. Now, you are speaking about the selling price. Can you tell

us anything about the manufacturing cost?

A. Well, if you will take 25% off you will find the manufacturing cost, that will give you 25% profit,—no, you would have to take 16-2/3rds. There is nothing mysterious about a transmitter, receiver and induction coil; everybody makes them, and as I say, you can put them in the same shell and a man would not recognize his as his own.

Q. Well, if these things are worth \$5.50 a set, a reasonable return on these sets, wouldn't be very much, would not amount to as much

as 41/2%?

A. What do you mean by 41/2%?

Q. 4½% on the gross receipts,—you know what that is?

A. Yes, but how does that situation enter into the situation in this town; these telephones don't cost \$5.50, the average cost is

\$2.42 per set; that's what they have cost up to the present time, and you can't come in here now and collect on present day prices.

Q. You are talking about the selling prices and not manufacturing prices?

A. Yes.

Q. Can you tell us what it costs to manufacture these sets at present day prices, have you made any estimate as to what it costs to manufacture these sets at present day prices?

A. We have rebuilt them by the hundreds, and it would be the most profitable part of the business,—the manufacturing part—

Q. (Interrupting.) Didn't I understand you this morning to say that at a dollar and two dollars and a half, that you could manufacture them for 50% of that?

A. Easy. It ought to run from-the shop cost, a good deal of the shop cost-

Q. (Interrupting.) What is there in the manufacture of these

things, Mr. Kelsey, that's difficult?

A. They are manufactured with a punch press and are just punched out by the thousands.

Q. They are manufactured a good deal like you manufacture

tacks?

A. Just about the same.

Q. What is there about that little induction coil that should cost anything like 75 cents?

A. It is an outrageous price for it.

Q. Couldn't it be manufactured as low as 25 cents? 939 A. Oh, yes, they sold for 40 cents years and years,-

sold for 40 cents for years and years. Mr. D. A. Frank: They could not be manufactured today for

that?

A. No, I will tell you, copper wire costs are a little high. The expense of a shop is the overhead, it isn't the direct punch work, the machine work.

(By Mr. Howard:)

Q. Couldn't they be manufactured at present day prices in quantities by machinery, at the most for 50 cents?

A. Yes, I would like to take a contract to furnish them on the

basis of that price.

Q. Then adding another fifty cents, that would be \$1.50 per set and adding another fifty cents to it, that would be thirty three and

a third per cent or, that would make it \$2.00?

A. Yes, as a matter of fact, it would be commercially wise for them to cut out this rental of instruments, and go ahead and use them the way other people have demonstrated for thirty years is the way to do.

Q. Buying them?

A. Absolutely uneconomical.

Q. Well, the only purpose of that is to camouflouge the four and a half, isn't it?

 A. That is my opinion.
 Q. That is the only tangible thing they can put their — on 940 at all?

A. It is the only tangible thing in that contract.

Q. All right now, we have manufactured these sets for \$2.00 a set and making thirty three and a third cents profit out of it.

Mr. D. A. Frank: Well, you haven't allowed anything - induction cords, yet?

Q. You said in manufacturing each one of these instruments, there's three of the-, for fifty cents a piece, didn't you?

A. Well, this started with this idea, that Mr. Wilson advanced-

Q. You are talking about prices now.

A. I am talking about getting down and turning these things through the machine. After you can turn the induction cord through the machine for forty cents a piece.

Q. The transmitter for fifty cents?

Q. And the receiver, fifty cents?

A. Yes. Q. That is \$1.50. Then adding another fifty cents, which would be thirty three and a third per cent, to a dollar and a half, you have got \$2.00 for the set of three. All right. Now you have got, say, thirty thousand sets at this exchange here, that is an invest-

941 ment say of \$60,000,00?

A. Well, where you stop was the misleading factor. Now you have got some freight and you have got a lot of things, coming down here, they have to be handled, I think \$2.50 is about right.

Q. You think \$2.50 is about right?

A. Yes sir.

Q. Allowing thirty three and a third per cent profit? These are not very bulky things. They ship them down here by the thousand and by the hundreds, don't they?

A. Well, every manufacturer has just a little pride in keeping his

prices up.

Q. Well then these things, knocking around the factory a good deal the way, they have bolts and nuts?

A. Oh no!

Q. Well, say \$2.60 and we have got thirty thousand here, that would be

A. \$78,000.00.

Q. \$78,000.00. And allowing depreciation and rent and everything upon that, they could be kind of liberal about it, say fifteen

A. Oh no, they will last twenty years. They never give way.

They never wear out.

Q. You think fifteen per cent is very liberal?

A. There is nothing about a transmitter, induction coil or receiver that wears out in twenty years.

Q. Well, say fifteen per cent.

942 A. I have repaired a thousand transmitters that were built in 1002 and these terminals are as good as ever, all it needed was a new rubber band and a renickeling and it returned on a new journey every twenty years.
Q. Well, allowing them fifteen per cent for returns, depreciation

and everything, that would be \$11,700.00 a year?

A. How much are you allowing, Judge?

Q. Fifteen per cent.

A. I would not allow that.

Q. But allowing that, that is \$11,700.00?

A. Yes.

Q. How does that check with your rental of \$13,000.00?

A. Pretty close doesn't it? I attack that proposition because this company flooded the United States with that proposition of fifty

cents, they fought us tooth and nail to ruin us and when they couldn't sell the instruments to the independent companies, they went and made them a blanket offer of fifty cents. They did it all over the country. They did that when we tried to put the switchboard in the City of Chicago.

Q. Mr. Kelsey, when you can turn out a box of matches like that and put it in a box and sell it for a penny, fifty cents looks like a pretty big price for turning out a standard piece of apparatus.

A. Well, the rule is to multiply your shop cost by five; something costs fifty five cents in the factory, you try to make the public

pay \$2.75.

Q. So there is nothing mysterious or particularly valuable about these little instruments, but all this \$5.70, is all built on-it is built up principally-

A. (Interrupting.) It is a recent discovery.

Q. Well, you say, even taking this upon the investment basis, allowing them a return upon their money and depreciation upon their property, that fifteen per cent-well, you say it is high?

A. Yes. Q. That checks out \$11,700.00? A. I still insist the company ought to own their own transmitters and receivers; it would be more feasible and sensible.

Q. That's all that you discovered for this four and a half per cent?

A. I don't want to go on record as not saying that the General Staff don't have some good points. A company like this ought to have something like that. It is their own property, it has got to be watched.

Q. This staff grows out of the fact that they operate on such a stupendous scale that they have to have an organization to take care

of their own properties?

A. Well, the long line companies need an organization, but the excuse for the General Staff is really not there at all. I tell you seriously, I would rather have, as I said, I can name men in

this Southwestern organization that can run rings, if I can use that term, around anybody in New York, and I can begin with Charlie Dick, and George Branch, and this man and that man. I can name them all. It is absurd to think that theoretical bunch down there can govern this crowd here. I think it is economically wrong and is weakening the moral of this organization, and it is leading to disaster in time. They get so, by and by that they feel they can't do anything without getting some fellow with the latest cut from New York. I think it is wrong.

Q. Mr. Rhodes, talked about Mr. Frank, said he goes up there

just as often as he can to get legal advice.

Mr. D. A. Frank: Did Mr. Frank make that statement? Mr. Howard: I did not undertake to quote it verbatem.

Mr. J. D. Frank: I would like to have that statement. Mr. Howard: I thought before that you were counsels, but it

seems it is all done in New York.

Mr. J. D. Frank: I think what you are referring to is when I was questioning Mr. Rhodes, if he had seen me in New York.

945 Mr. Howard: Yes, he said the General Counsel was seen around up there a good deal.

Mr. D. A. Frank (reading from the record):

"Q. Did you see me up in New York, getting information in the last few months?

A. I remember seeing you there.

Q. The attorneys of the Bell system of the United States are taking advantage of the legal department of the American Telegraph and Telephone Company?

A. I see them frequently when I have occasion to be in the por-

tion of the building that the legal department are.

Q. You see the General Counsel of this system, up there frequetly do you?

A. Yes.

Mr. J. D. Frank: The questions were asked by J. D. Frank. Mr. Howard: Oh, yes, when you get to the end of the row, you

chase up there,

Q. There is nothing further then, you can tell us about the service

of this general staff?

- A. Getting back to the legal department: Mr. Chipley won his battle in the southern territory without any help and I think it is a fine thing for somebody to keep books, study records, and such as that, but when you say that Mr. Morsbund can't handle Nebraska and Mr. Dillon can't handle Minnesota and Mr. Frank can't handle Texas-
- Q. But, Mr. Kelsey, haven't they here, in all these local exchanges of the Bell System, haven't they got competent 946 bookkeepers-

A. (Interrupting.) You bet they have. Q. (Continuing:) And office force?

A. They really have as good a bunch of accountants as any organization. I have explored them all.

947 Cross-examination.

Questions by Mr. D. A. Frank:

Q. Let's talk about this 41/2%. You qualified as an expert.

A. No, sir, but I have heard about this Board of Ignorance ever since it was a baby.

Q. Have you ever been a member of the General Staff?

A. I hope not. You couldn't get on that with an injunction. Q. Have you ever been in charge of the Southwestern Telegraph & Telephone Company's property?

A. There was a time when the Northwestern people had a great deal to say about what went on down here. We used to know just about as much about the Southwestern as they did.

Q. What was your position at that time?

A. Acting Chief Engineer of the Northwestern Bell Telephone Company.

Q. At \$75.00 a month?

A. I was the highest priced man in the organization.

Q. And on that rate you had charge of the Southwestern property in Texas, at \$75.00 a month?

A. No, sir, but we were repeatedly told how much better they were down here than we were.

Q. What do you know about the General Staff?

A. I ought to know them by heart. I have heard this same stuff so much.

Q. Is that the only way?
A. I know all of them.

Q. Have you ever been through the laboratory?

948 A. Yes, sir, and all through the Western Electric's laboratory, and all of them. They are jokes.

Q. What do you say? A. They are jokes.

Q. Everything that has been accomplished in the telephone world

in the last forty years by the Bell General Staff is a joke.

A. No, sir; any group of men sitting around and talking telephones all the time gradually—they haven't done anything signal yet, comparatively infinitesimal. There has never been a telephone invention worth looking at outside of the original transmitter. There will not be a word in history about the telephone business so far.

Q. Would you admit that Mr. Graham Bell invented the tele-

phone?

A. I think he was absolutely the first one working on that very thing. He came by it honestly and naturally, but that is not the General Staff.

Q. Is the telephone plant today in any way comparable with Mr.

Bell's invention?

A. No, sir, it is an evolution, the poorest evolution that ever was. I am absolutely ashamed of the scientific advance of the business; and for the number of men employed by the General Staff, they have produced less per dollar than the Kellogg bunch ever did.

Q. The men in this room are better than the men on the

949 General Staff?

A. I would rather have most of them than anybody I have seen. Charley Gates has no superior, and I want to tell you right today, if the Northeastern Telephone Company had the difficult problems that Charley Gates has had all these years, and kept his health, they would have been in the lunatic asylum years ago.

Q. You could take these eight or ten gentlemen-

A. (Interrupting.) And they would make the Northeastern Telephone Company.

Q. And set up a General Staff with them, and they could do very

much better work than-

A. (Interrupting.) It is not remarkable to say I think they would.

Q. They could make all these new inventions and all the new improvements?

A. What new inventions?

Q. Aren't there any?

A. No. sir.

Q. Five thousand inventions, the testimony in this case shows.

A. What?

Q. Five thousand inventions.

A. You are talking about patents.

Q. You think these gentlemen could replace the entire General Staff without loss?

A. The two hundred Kellogg patents that Kellogg had when he went into business were worth more money than all the 950 patents you ever had.

Q. Including the original transmitter?

A. What right did you have to that? Anybody can make a transmitter. I can take a dish pan and talk from here to New York

Q. You would have to have something else besides that?

- A. Yes, sir, I could fix it up with what I could find in the postoffice here.
 - Q. You would have to have something else besides that?

A. A few wires.

Q. Anything between here and there?

A. I talked from San Francisco to New York as plain as I am talking to you, over the first instrument. You haven't made any progress with them.

Q. Did they have phantoms when they first started?

A. Phantoms long before the General Staff ever got under way. I was phantoming between—all over South Dakota before this staff was ever heard of.

Q. Did you have any repeaters?

A. Not at that time.

Q. From New York to San Francisco?

A. Later on we had.

Q. Can you talk from New York to San Francisco without repeaters?

A. I believe you can, straight line. They didn't try it, I guess,-I don't know.

Q. Do you think all the work that has been done by the 951 General Staff has been wasted?

A. I want to put in this record that when I made my address to the Wisconsin Convention at Madison from California that I had to use a Kellogg telephone before I could get them to hear me.

Q. I asked you a question, Mr. Kelsey,-do you think that the work of the General Staff has all been wasted?

A. The most extravagant waste in history.

Q. Do you think there is anything in standardization?

A. Yes, sir, but you can't standardize. Q. I think they have standardized.

A. There hasn't been, you haven't done it.

Q. Don't Bell construction in St. Louis look about like Bell construction in Houston?

A. You have standardization, plus local conditions. You have entirely different conditions at different places.

Q. Isn't a poll set about the same way all over the country.

A. Yes, sir; the best line I ever saw was from St. Paul to Minneapolis.

Q. Aren't the cross arms about the same size all over the country?

A. Yes, sir.

Q. And aren't the pins on the cross arms set about the same distance apart?

A. Yes, sir, they ought to be.

Q. Aren't the switch boards about the same kind?

A. No, sir,—Type 8, 9, 10, 1 and 1-A,—I can't enumerate the number of types you have got.

Q. There are some things that are standard about it?

A. No, sir, there is nothing standard about a switchboard.
 Q. Do you have some switch boards in the country where a girl

has to have an arm four feet long and other places two feet long?

A. No, sir, you are limited in size to a 9,600 line board, otherwise

she would have to have a step ladder.

Q. You do standardize something, even about a switch board?

A. There is a limitation on your great, unwieldy jacks, your No. 92 jacks. Even the Kellogg Company builds 18,000 line boards and the poor old Western Electric Company is limited to a 9,600 line board. We have been pioneers in this work.

Q. Can the Kellogg Company supply an 18,000 line board?

A. Yes, sir, if they have an order. Q. You haven't had any orders?

A. No, sir, you fellows have grabbed the field.

Q. How long has it been since the Kellogg Company has installed an 18,000 line board?

A. Every board that has been installed has got that much of a

foundation.

Q. How long has it been since they did that?

A. All of our sections were 18,000 line sections. That is all that is necessary.

Q. Just mention one place where they have installed it in the last year.

953 A. An 18,000 line board?

Q. Yes.

A. I am talking about 18,000 line sections.

Q. Switch boards?
A. You are foolish.

Q. I may be.
A. You know you are. Whoever heard, in their life, of an 18,000 line board. You generally start with a thousand-line equipment. They have the foundation for an 18,000 line board, and all your Company ever had was 8,800.

Q. Do you now of a single board of 18,000 lines?

A. Cleveland has got one. They had one that is out of business and you could have bought it. I bought it and have got it in my shop.

Q. Cleveland is the only one that has one working now?

A. You have lied about it enough to beat the securities down-

 Q. You are using a word that is not permissible.
 A. I don't like the word "lie" myself; I beg your pardon for that. They didn't lie about it, but they did misrepresent it.

Q. I think that would be more polite to the Court.

A. I apologize to everybody when I have. I am a very humble

Q. Then you don't know of a single place, besides the one exchange in Cleveland, where they are using an 18,000 954 line switch board?

A. They are using it all over this country.

Q. I asked you to name all the boards operating 18,000 lines.

A. I think Logansport is operating 18,000 lines.

Q. Is Logansport operating 18,000 lines on one switchboard?

A. They have a board that could operate it. Q. I didn't ask you whether they could. I asked you whether or not Logansport is operating 18,000 lines on one board?

A. No, sir, they are operating about 4,000 lines on one board

which has possibilities of 18,000 lines.

Q. Tell me any town that is operating 18,000 lines on one switch board.

A. St. Louis has 12,000 lines.

Q. I am not talking about 12,000 lines, but about 18,000 lines.

A. That is the next largest one.

Q. And this one that you have in your "junk" shop——A. (Interrupting.) That is the Old Cleveland board.

all junked and sold.

Q. Now, Mr. Kelsey, you named yesterday, when Mr. Howard asked you if any of these men on the General Staff were men of world wide reputation, you named seven, eight or ten men?

A. I don't think I named that many. I remember naming

Charley Scrivener.

Q. Well, you named John J. Carty?

955 A. Yes, I think John is a good man, and I love him dearly.

Q. And Mr. Gheradi?

A. Yes, sir; and I mentioned Mr. Stevenson as a very capable

Q. And you named Mr. Watterson?

A. No, he is a fine fellow, but I wasn't talking about him as a scientific man.

Q. Isn't Watterson a scientific man?

A. Oh, no indeed. He is a pseudo scientific man and has that reputation, too, but then to get out in the world as an engineer-

Q. (Interrupting.) Isn't he an engineer? A. I don't know. I heard him testify in the Central Union case. Oh, I will tell you, I have got them all.

Q. Well, take Mr. Rhodes. Is Mr. Rhodes an engineer?

A. Rhodes isn't a scientist by a long ways. He is getting to be

first-class,-getting to be a first-class witness; he has told his story so often that he knows it very well.

Q. Isn't Estabrook-

They have taken him off. Poor old "Esta" A. (Interrupting.) we missed him terribly at Cleveland.

Q. Mr. Cox is not a scientific man?

A. He is a good fellow and I am not saving anything against him.

Q. Do you know Mr. Theodore N. Vail?

Theodore has been a very successful financial man, but not a scientist. If I had, or if you had spent the money advertising yourself, as much as Mr. Vail has had spent on him-956 it is nothing in the world but propaganda, pure and simple.

Q. Mr. Vail is the result of advertising? A. Beautiful advertising propaganda.

Q. He is a sort of a trade name, trade mark for the Bell Company?

A. I think he is. I have a great deal of admiration for Theodore Vail and I have boosted him more than any man in my paper.

Q. And he is a man that the Bell Companies spent a great deal of money on in advertising, and is just something like the picture of the old Dutch-

Just old Cincinnatus sent out to play,-to A. (Interrupting.) get him because the Company was going on the rocks.

Q. You have seen the picture of the old woman-A. (Interrupting.) Yes.

Q. And you just consider Mr. Theodore N. Vail as a trade mark for the Bell Company?

A. I consider him—I would not like to say that,—he is a nice old man.

Q. Do you know Mr. Thayer?

A. Yes, Henry Thayer, and he is a nice man. He is the nicest man in the whole outfit, and I think that Henry Thayer, as President of the Company, is the best selection they have ever made.

Q. Colonel Jewett, is he a man of any prominence?

957 A. Oh, no.

Howard: We wish to object and protest against this useless repetition and nonsensical stuff being piled up in this record and unnecessary costs being piled up against these litigants in this case, and I insist that it is a useless expenditure of time and money.

Mr. D. A. Frank: You went into it yourself.

(By Mr. D. A. Frank:)

Q. Do you know what Mr. Vail does for the Southwestern Company?

A. Very little. He doesn't do anything; he is Chairman of the Board. They have put him on a nice, big comfortable shelf.

Q. Do you know Mr. N. T. Gurnsey?

A. Yes, and I don't think he is as good a lawyer as you are. Q. You don't think that he is as good a lawyer as I am?

A. Yes,—I don't think he is any better.

Q. He is General Counsel for the Whole system?

A. Yes; they brought him from Iowa, but he is not an international character, or what you would call a scientific man or a-

Q. (Interrupting.) Is he a man of any standing in the American

Bar Association?

A. Oh, he may have been President. He is a good mixer, and I like to talk to him and discuss things. Every time I go to New York I go to see Mr. Gurnsey. You are trying to make me say something mean about him, and I do not think it's fair. 958

do insist that, as a rule, the whole organization, as compared with the Steel organization and other institutions of similar

size-

Q. (Interrupting.) Now, Mr. Kelsey, that General Staff there performs certain services which have been detailed here before the Court?

A. Yes, as a sort of a clearing house, as I have said.

Q. Your idea is that it is all useless?

A. Why, no, it isn't useless, but that's all the A. T. & T. Company in New York-it is their duty to look after their own business and to see how it is getting along.

Q. Did you ever hear of Mr. Du Bois?

A. Why, yes, I know Du Bois as well as I know you.

Q. Do you know Mr. Gifford?

A. Yes. Q. They perform some services for us also?

Q. Do you happen to know, Mr. Kelsey, that the Southwestern Company's books are audited several times a year by auditors sent

out by the American Telephone & Telegraph Company?

Yes, and I know that after all of your books are audited you then have them audited by my old friends Patterson, Teale & Dennis; after they all get done, you have to get Patterson, Teale & Dennis to see whether they are right or wrong, and this shows that you

fellows aren't infallible.

959 Q. Don't we save something on the auditing?

- A. No, sir, there is not a man in the Southwestern Company but who has sense enough to run the books under the new order.
- Q. Doesn't every business get an outside auditor to audit their

A. Yes, and there are auditors in Dallas or Houston that can tell you all about your books.

Q. And don't they have to be audited in turn by outside auditors?

A. I don't think so, no, sir, not under the present system of bookkeeping.

Q. Now, with reference to engineering services, I believe you say that is all-

A. (Interrupting.) Bunk.

Q. All bunk?

A. Yes

Q. And the work done by Mr. Carty in the last twenty years for the Bell System has been thrown away?

A. What has Carty done?

Q. You think the work done by the General Staff has been thrown away?

A. There has been nothing signal turned out in the last 20 years.

Q. What about the new accounting system?

A. That new system of accounting that was evolved—there were other people there besides Bell representatives,-the railways and everybody else.

960 Q. Has the Southwestern Company evolved its own sys-

tem?

A. No, sir, they have not got their own system. The Kansas City Home have got the same system. All of these companies-

Q. (Interrupting.) Where did we get the system, from the American Telephone & Telegraph Company, didn't we?

A. No, it was evolved in accordance with the Inter-state Commerce Commission's rulings.

Q. Did our accountants here in Houston evolve the system we

have?

A. No, I have told you time and again that it was done in connection with the Inter-State Commerce Commission's-the auditors of the Inter-state Commerce Commission in conventions have consulted us and they have had with them the whole bunch. That's why it's uniform and standardized. You folks didn't discover that word "Standardized."

Q. So at least the accountants here in Houston didn't evolve the

system that they have, did they?

A. Well, they could easily do it,—there is nothing mysterious about it-

Q. (Interrupting.) There isn't anything mysterious about any-

thing, as I understand you?

A. You can absolutely do it yourselves and do not need any accounting assistance from anybody in New York. I think that is a slam on Texas.

961 Q. All the work that has been done by the Accounting Department in New York for the City of Houston has been

thrown away?

A. What did they do? What have they done for the property in the City of Houston? They haven't done anything since that was put over. They have set up the forms and keep charging for the same thing year after year.

Q. Don't they continually perform services? They don't amount to a hill of beans. A.

Q. What is money worth on the market now?
A. The Western Electric Company is quoting \$20,000,000.00 worth of notes today at 73/4 %.

Q. Those are secured by-

A. (Interrupting.) No, by the word of the Western Electric Company.

Q. They are notes that must be sued upon?

A. We bought some,-bought \$10,000.00 worth, and were glad

to get them and are glad to get any kind of a loan above 7%.

Q. What does stock produce now,-stocks listed on the New York market,-take Santa Fe stock, B. & O. stock, or American Telephone & Telegraph Company stock?

A. I know some of them. I know what it-

What do they produce? If you invest Q. (Interrupting.) \$100,00 on the stock market in New York, what per cent would you get out of it? 962

A. If you buy A. T. & T. at 97 it might run a little more than 8%; if you buy Western Union at 86 it might run-you

might earn 8.1% on your money.

Q. So on the stock market today even the very best stock is selling

at 8%, or better?

A. Yes, money is naturally high and a man will not invest it at

5% where he knows he can get 71/2%.

Q. The evidence in this case shows that this plant in Houston needs \$500,000.00 new money for the coming year for improvements to be made in the City of Houston-

A. (Interrupting.) Well, they won't have any trouble in get-

ting it.

Q. What per cent will they have to pay?

A. I imagine this Western Electric Company loan at 73/4 % is to take the place of some accounts,-some of these companies-that some of these companies have bought. I think the Western Electric Company is doing the financing for you folks.

Q. You think the Western Electric Company is loaning us

money?

A. Oh, no; but you owe them just about twenty million, and it is a very curious coincidence that this loan of the Western Electric is just about the amount of the note issue.

Q. And about how much for new investment will the American Telephone & Telegraph Company and the Associated Companies

have to get?

- 963 A. They will have no trouble getting sixty to one hundred million.
- Q. Hasn't it been from one hundred to one hundred and twentyfive million dollars?
- A. Not until the last couple of years have you been getting up above sixty million.

Q. We could use three times that much if we could get it?

A. Of course you could, and I could too.

Q. Thousands of people are putting telephones in in this city and we can't furnish them because we couldn't get money, but if we wanted to sell stock on what basis would we have to sell it?

A. Who? Q. The Southwestern Company.

A. You are not in this money market and you have no stock to sell, not one particle of stock is for sale in Texas, except to the A. T. & T. Company.

Q. How can we get money for this \$500,000.00 in Houston?

A. How did the Central Union get money from the A. T. & T. Company all those years when they lost money year in and year

Q. Where did they get it?

A. They got it from the A. T. & T. Company; it's their own business.

Q. Do you know what they charge us for it?

A. They charge themselves for the money: The A. T. & T. Company owns this property and are financing themselves, and it is a wonder to me that they don't charge 20%. 964

Q. The testimony in this case shows 5.88%.

A. Yes, and you may say that they lost money and probably paid 6% for it, but then you are loaning yourself money, and you take away from the Southwestern Company its ability to grow in Texas.

Q. If the Southwestern Company is borrowing money from the American Telephone & Telegraph Company at 6%, or what's equivalent to 5.88%, and the A. T. & T. Company is paying 8%, or better, for it in the world market-

A. (Interrupting.) It is not, though.

Q. Where are they getting it?

A. Are you-don't forget the little 51/2% and 6% interest that you are talking about. The stock is paying 8% and the A. T. & T. isn't floating any 8% loans. The A. T. & T. 6's-you can enlighten

the Court quick with your reports.

Q. Didn't you know that the A. T. & T. Company has just passed or is about to pass—that the stockholders of the A. T. & T. Company have just passed a resolution to increase the stock, the authorized capital stock of the company from \$500,000,000.00 to \$750,000,-000.00?

A. Yes, but what has that got to do with the case, because the

necessity of bond issue possibilities-

Q. (Interrupting.) When you start to sell stock, you can sell it at less than 8%

A. Oh, you are handing it out as fast as you can at 97, and 965 I have understood that you sold some for less than that,about 2,000 shares.

Q. They sold at 92½ and paid 8% on it?
A. You don't have to pay it. You can sell stock at any price; a man who buys a share of stock doesn't buy anything.

Q. But the man who buys the stock thinks that he is getting 8%?

A. Yes.

Q. And because he is getting it, he certainly hopes to get it in the future?

A. Yes, and my wife has 25 shares, too.

Q. From the standpoint of the Southwestern, is it worth anything to us to get money at 6% when the American Telephone & Telegraph Company has to pay more than 8% for it?

A. What are you talking about? The A. T. & T. Company is

taking care of its own property.

Q. You can't see the proposition that the Southwestern gets any money from the A. T. & T. Company?

A. No, it is all one company, and you are taking your left hand

and loaning your right hand money.

Q. And there would be no objection to charging the Southwestern

eight, ten or twelve per cent?

A. Where the A. T. & T. Company got money for you didn't you develop the Southwestern from a wreck and maintain it phys-966 ically and develop-

Q. (Interrupting.) Answer my question.

A. What was your question?

Q. I said, them there would be no objection to charging the Southwestern Company eight, ten or twelve per cent for the money?

A. Why, no.

Q. No objection at all?

A. Why, they are simply charging themselves that, and it would be just the same.

Q. You think the A. T. & T. Company is obliged to let the South-

western have money at 6%?

A. Why, no,-they own the property, and why wouldn't they? It wouldn't make any difference at the end of the year, and you would have the same amount in the treasury, whether they charged 10% or 3%.

Q. And so you see no value in the financial arrangement between the Southwestern Company and the A. T. & T. Company?

A. Financial agreements between two companies owned by the

same persons are very touching.

Q. The testimony in the case shows that the 41/2% agreement was entered into at a time when the Southwestern Company was entirely independent of the American Telephone & Telegraph Company.

A. I think that is the silliest arrangement. I can't imagine an institution that ought to be as intelligent as the American 967 Tel. & Tel. Company which will continue to proceed with the

41/2% clause,-it causes more trouble and more expense fighting for the fool thing,—you have got orders to fight for the $4\frac{1}{2}\%$ more than anything else, and everything else is to be thrown overboard, but sustain the 41/2%.

Q. Who gave me the orders?

A. I don't know.

Q. You are swearing-

A. (Interrupting.) Yes, I am swearing, and I am perfectly satisfied and tell this Court, whole-hearted, that your principal duty in this case is to sustain the $4\frac{1}{2}\%$.

Q. Well, from whom did I get the orders?

A. I don't know.

Q. What makes you think I have such orders as that, Mr. Kelsey?

A. Because that is considered of more importance than some of the-

Q. (Interrupting.) Suppose I told you there wasn't a word of truth in it?

A. In other words, I am a liar?

Q. Call yourself what you please, but there isn't a word of truth in what you said. I am under no orders.

A. Well, may be

Mr. Howard: Are you testifying, Mr. Frank? As long as you have raised that issue, I would like to have you take the stand and let me question you about it.

A. I will eliminate that service charge for no other reason than what they are doing in New York; We all know what any common sense concern would do, which is to protect its own property anywhere in the United States.

(By Mr. D. A. Frank:)

Q. Mr. Kelsey, you have got a good deal of animus against the American Company?

A. Not a bit. I have got a great deal of admiration for them,

but I think the present scheme is a fool thing.

A. And I think the big bankers think so, too.

Q. Have you ever talked to any bankers who knew anything about—

A. (Interrupting.) Nobody ever knew anything about the Bell Company.

Q. You also have some little feeling against the Western Electric

Company?

A. Not a bit in the world. I worked for them for years and put out the first boards—

Q. They beat you out of a lot of sales?

A. You bet! And I love a competitor that fights.

Q. And you are getting back at them?

A. Not a bit. I would just as soon testify for you fellows, and did in a case once brought against the Bell Company, against the industry, and I haven't been paid yet for the trip.

969 Q. And you want to take it back because you were selling

a Kellogg switch board to Mr. Noble?

A. No, he had a contract with the A. T. & T. Company for 4½% and John Noble asked me to come.

Q. Why did you come?

A. He asked me to come,—John Noble did, and I am sorry I did, because I never got my per diem.

Q. Did you get any at all?

A. No, and that's the only time I was ever skinned.

Q. If we eliminate the license contracts entirely, and didn't have the 4½% arrangement, each one of the Associated Companies would have to perform all of these services for themselves, wouldn't they?

A. Yes, sir, it is very easily done. Q. You think that would be easy?

A. Yes, sir.

Q. Would they get the same service they are getting now?

A. Naturally they would not. Having that cut off, they would serve themselves.

Q. They would have to finance themselves?

A. That has been the biggest mistake the A. T. & T. Company has made in their centralizing plan. It was a fine thing in 1906, but a poor scheme now.

Q. Suppose we went back to the arrangement you suggest 970 and had no such arrangement as the license contract implies, and the Cleveland Telephone Company should develop something that would be of value down here,-how would we find it out and how could we use it in Houston without this clearing house you speak of?

A. What would they develop?

Q. Anything that might be useful. You say there has nothing

been done by the Staff?

A. If you let the Western Electric Company alone, they would do honest development. They took the natural function of developers away from the Western Electric Company and made them secondraters,-they are dissatisfied, when they are the natural producers. The manufacturer, with all of his facilities behind him, is the natural producer of things. He has everything to work with and is the natural producer of these things. They put an inefficient out-fit in New York trying to accomplish something and ignored the natural producer.

Q. The manufacturer would want to change these things as often

as possible?

A. No, sir, he is the fellow that never wants to change, because their tools are the principal assets of their business.

Q. Wouldn't he want to change so he could sell new things? A. No. sir, he would rather sell one standard piece. 971 Q. Don't the automobile manufacturer change his design

nearly every year?

A. A few little salesmanship points, but they try as near as they

can to keep it as near as they can-Q. (Interrupting.) Does the Hudson speedster look like it did five years ago?

A. No photograph don't look like it did five years ago.

Q. Does the Willys-Knight car look like it did five years ago?

A. No, sir, they have changed the body. Q. Why?

A. To give it a little different look. It is mostly psychology about automobiles. A little paint and powder,—that is all there is to it.

Q. Wouldn't it be psychology about telephones if it was all in the

hands of the manufacturers?

A. No, sir. Do you suppose the Western Electric Company would deliberately change a well designed system for something else?

Q. Why does the Willys-Knight Automobile Company deliberately change?

A. Powerful competition. They don't change the fundamental things.

Q. They change the looks?

A. Yes, sir, but don't change the fundamental things in the car. There is never but one change, and that is the self-starter, 972 and, by the way, the Delco starter was developed in the Kellogg shops.

Q. They change it so that they can sell more automobiles?

A. They change the lines a little bit, get the bodies from somebody else.

Q. To sell more automobiles?

There is not one man out of ten A. To attract foolish people.

that ought to have an automobile.

Q. Did you know that one of the main advantages claimed for the Staff is that by standardizing and controlling the manufacturer, they do those things economically instead of turning the manufacturer loose to exploit the Associated Companies?

A. No, economy don't appear in the calculations anywhere.

Q. Do you know that is one of the things claimed?

A. I have heard Mr. Rhodes say that seven times. He even tried to say he saved \$2.00 a year on a cord.

Q. That isn't true?

A. No, sir, the Western Electric Company is perfectly competent to keep up and keep ahead of your Company's requirements all the way. You rob them of their natural function.

Q. Instead of the dog wagging the tail, the tail ought to wag the

dog?

A. The tail has been wagging the dog a long while, and they are going to pay for it some day.

973 Q. You think we would be better off if we would turn over to the manufacturer-

A. (Interrupting.) Yes, sir, they are chafing under it right now, and they are the people that ought to be doing this developing. I know how these fellows feel. I know all of these fellows.

Q. Your idea is that it would be very much better to turn it over

to the manufacturer?

A. Where it belongs,—yes, sir.

Q. You say nothing has been done that ought to have been done in the telephone field in the last fifteen or twenty years?

A. Nothing signal.

Q. Was the Pupin coil anything?

A. A wonderful thing. That is only used—

Q. (Interrupting.) It is not in use all over the country?

A. No, sir.

- Q. Do you know whether there are any in use in the City of Houston?
 - A. I wouldn't think there would be any need of them.

Q. None at all? A. No, sir, not with a No. 19 cable.

Q. Do you know what they are used for?

A. Yes, sir, I know about them. They claim if they didn't have those coils in the trunk cables they would have to use No. 13 cables to talk 16 miles.

974 Q. Underground? A. Yes, sir.

Q. It is quite a saving? A. What for?

Q. Do you agree with them that that is a saving?

A. Absurd.

Q. You think it is absurd? A. Yes, sir.

Q. Did you ever try to talk 16 miles underground without them? A. I talked 22 miles over No. 22 gauge—between Minneapolis and St. Paul.

Q. What is your longest haul in the Keystone?

A. Something like 22 miles.

Q. Where from?

A. Running from East Chester, and down to Atlantic City?

Q. Does the Keystone have a line to Atlantic City?

A. Yes, sir, but it has been taken away from them. Your people have been busy clipping off the arms and legs of these poorer companies.

Q. You seem to indicate there might be some things developed

about the telephone that has not been developed.

A. No, sir, I claim that the development of the telephone business, compared to the development in flying and photography and wireless telegraphy, is absolutely negligible. We have nothing to

brag about, and we will not live in history. The only thing 975 will be the original Bell transmitter.

Q. How about wireless telephoning?

A. That hasn't got you anywhere yet. I was doing wireless telephoning across the Mississippi River in 1898. Q. Did you ever talk across the Atlantic Ocean?

A. No, sir.

Q. That was done by the General Staff?

A. They didn't say it was,-they never claimed that in the Cleveland case.

Q. Didn't they talk to Hawaii?

A. No, sir, they didn't say so in the testimony. The newspapers said so. You have a wonderful press agent in New York.

Q. The press agent tells the things that are not done?

976

A. Yes, sir. Q. Have you talked over wireless telephones yourself recently?

A. No, sir. One time I had a wireless station. I received the first wireless message ever sent between St. Louis and Chicago. I worked with the inventor in this business.

Q. Do you know what the future of the wireless telephone is?

A. No, sir, I do not.

Q. Do you know whether or not the Southwestern will

ever use wireless telephones?

A. I would be very foolish to say. I have heard men say fifteen years ago that a man would never fly. The human mind has some wonderful attainments in science.

Q. You would not say we would not use it?

A. Some day some jeweler, or somebody, is going to discover some-

977

thing in the business that might be useful, but so far no telephone man has brought it out.

Q. Have you heard anything about putting four or five conversa-

tions over one piece of wire?

A. You ought to put forty or fifty,-you ought to put one hun-That was suggested-it was not suggested by your General You bought that from Forrest. You paid him \$100,000,00 Staff. for it. He told me about that years ago.

Q. Was it worked out so that you could talk?

A. Yes, sir, pretty near it. You fellows are the finest finishers-

Q. (Interrupting.) Taking the thing the other fellow falls down

on and making something out of it?

A. No, sir, he was doing beautifully with it. He got along quite He had a divorce from his wife and ouit working and was worried, and in the meantime needed money and sold it to you folks, and then you went ahead with it.

Q. When did he sell it?

A. Not very long ago. Q. How many years ago?

A. Six, seven or eight, probably,-I don't know. I don't see why any man that has got any electrical conception at all couldn't put forty or a hundred conversations over one line.

Q. Could put one hundred?

A. I don't see any reason why you couldn't put a thousand, if you had machinery enough.

Q. Let's be reasonable,-let's make it one hundred.

- A. Make it forty. You didn't do it,-you bought it. Company has never given birth to anything in that line. They finish Why shouldn't they do something once in a while and earn a dollar?
 - Q. Is it worth anything to the Southwestern Company to have this "bunch" that you speak of?

A. Nothing yet.

Q. None of the instrumentalities we have?

- · A. No, sir, not yet, -nothing that I can't buy from any company in the world.
- Q. Do you know whether you have to pay more for the apparatus than we have to pay?

A. According to the record we pay a good deal less.

Q. The record in this case?
A. We have got a price on all the switch boards you sold.

Q. We have a record here that shows the Western Electric Company sells its apparatus to the Associated Companies cheaper 978 than to the independents.

A. You heard some fellow testify to that, but in practice

you undersell when you get a chance.

Q. That might be so.

A. Yes, sir, you fellows can do anything to suit yourselves,-you

have got it all.

Q. If the independent company had its price very much higher than what we were paying, the Western Electric Company might undersell?

A. The prices are all the same.

Q. Might undersell the independent and still charge more than they charge us?

A. No, sir, you pay a good deal more, although you sav you do

not.

Q. Have you heard anything about development by which they put one conversation over four wires instead of four over one?

A. One conversation over four wires?

Q. Yes.

A. What for?

Q. Have you heard of that? A. What foolishness is that?

Q. That is foolish?

A. I think so.

Q. Do you know whether you heard of that?

A. No, sir, I wouldn't want to hear of anything like that.
Q. Suppose you had four wires that were so fine, Mr. Kelsey, that one wire would out-weigh eight such wires, would

it be cheaper to put it over four wires?

A. That is what you ought to do in the conduct of your business to offset the other extravagance. You ought to do something about this thing, and I am glad to hear you are economizing.

Q. Do you know what has been done in the way of economizing

by using fine wire cables?

A. You made fun of us when we did that, and now you say you have done something new.

Q. Suppose there should be some development-

A. (Interrupting.) By the way, the Western Electric Company developed all these messages over one wire.

Q. Done by the Western Electric?

A. Yes, sir. I was down there in August. You have robbed the producer of its functions.

Q. Do you know the difference between the Western Electric and the General Staff?

A. Yes, sir, I can tell by looking at them.

Q. Really everything that has been done that is worth while has been done by the Western Electric Company?

A. There hasn't been anything signal or meritorious done in

twenty-five years, except the automatic.

Q. Did you know that the General Staff has spent something like twelve or fifteen million dollars in development of the semi-

980 automatic switch board?

A. Yes, sir; the first four million dollars they spent was for the automatic company and they gave \$300,000.00 to our little concern for our rights, and gave the Stromberg \$350,000.00, and the semi-automatic \$350,000.00, and by that time they started to go into the automatic business. Every patent was gobbled up. They do spend money down there, they are the finest spenders I ever knew. We developed the automatic system, the Kellogg Company, but never spent that money.

Q. That was done by the General Staff?
A. Yes, sir, after they bought the rights.

Q. After they get the patents of these other people and the shop rights, they can go ahead and make the automatic switch boards?

A. That is why they bought the rights.

Q. If they sell \$100,000,000.00 worth of switch boards around over the country, they could very easily add 10% or 12% on each switch board and soon get the \$12,000,000.00 back?

A. They get more than 12%.

Q. They could add 50% and the fellow buying it wouldn't know the difference?

A. Yes, sir.

- Q. He would only know he paid what he thought was a high price?
- A. This invention was by a jeweler, and not by a telephone man at all. He made it possible. It is all bunk about you folks 981 coming in here with a new, novel system. That jeweler was inspired, and he wasn't a telephone man.

Q. He just had the inspiration?

A. He had the hunch. He worked on it for years. Mr. Harris

came along and furnished the money.

- Q. Suppose the Company in Houston were a separate company, how would it get the benefit of the use of these automatic switch boards?
- A. Slip in and tell the Kellogg Company: "Here, build us one and we will cancel our Western Electric business"-and they would get it quick.

Q. As cheap?

A. And cheaper. Q. Save money by it?

A. You just let the Stromberg-Carlton Company and Kellogg go to these fellows—that is another silly thing you are going to pay for,—having your eggs in one big Electric Company basket.

Q. Turn the patents loose?

A. They are loose.

Q. Let the Southwestern Company pay royalties to everybody?
A. There isn't a cent of royalty paid in the telephone business.

Q. On any patent?

A. Not a cent. Q. Did you ever see the Franklin Automobile?

A. Yes, sir.

982

Q. It is an air-cooled car?A. Yes, sir.Q. They have got a patent on it?

A. They seem to have.

Q. Also you have seen the Stanley steamer?

A. Yes, sir.

Q. It is patented?

A. Yes, sir.
Q. It is patented?

A. Yes. sir.

Q. And you say there never was a cent royalties paid on patents in the telephone business?

A. I am talking about today.

Q. Hasn't the Western Electric Company or the General Staff had to pay for the patents they got on the automatic from other people?

A. Yes, sir,

Q. Hasn't it had to pay for other patents it got?

A. In order to get it, but if this Company was to buy in the open market they could go to the Kellogg Company and buy these things.

Q. You testified here before that you knew of switch boards that had to be torn out because of something covered by patents? 983 A. Yes, sir, in St. Louis. You folks at that time had a multiple patent-in 1902, and a year later it ran-

Q. (Interrupting.) A year too soon you build one and had to

tear it out?

A. We got around that.

Q. How?

A. By removing the multiple before that particular operator. She had to use her answering jacks. Getting around it was so simple that it was silly.

Q. The Southwestern Company never has to do anything like

that?

A. No, sir, that didn't cost even the Kinloch a cent.

Q. You went ahead and used the Bell patent without its costing you a cent?

A. It didn't cost us anything. We had more valuable patents

than they did.

Q. If, however, Mr. Kelsey, the General Staff was wiped out and

each local staff undertook to do its own staff-

A. (Interrupting.) Let the Western Electric Company do it in conjunction with these boys. They are thinking and studying right along.

Q. Would the Western Electric Company be able to tell us how to

handle traffic matters?

A. What do they care about traffic matters? What-

Q. (Interrupting.) What advantage would there be in taking it away from the General Staff and transferring it to 984 the Western Electric Company?

A. The proper development of your apparatus.

Q. Doesn't the Western Electric Company get the full benefit of

the General Staff?

A. They give birth to all these things. All these machines and things are made there. One is an artificial producer, a sort of incubator, and the other is the natural baby.

Q. Doesn't the Western Electric Company have the benefit of

their own engineers?

A. That they pay for.
Q. The benefit of their own engineers? A. They have got some good engineers.

Q. If they think of something better than the General Staff, then they tell them about it?

A. Yes, sir, and the General Staff grabs it and calls it their own.

Q. So that anything the Western Electric Company is able to evolve is evolved even at the present time?

A. They are working right along, yes, sir. They are held back

and not given full swing,

Q. The Western Electric Company has the General Staff-

A. (Interrupting.) If the General Staff was turned over to them they wouldn't need them. They would let them out in the open market, hunting for a job in some other line of work. They have got so many engineers now, there are so many they never miss anybody down there.

Q. How many have they got?

A. Twenty-six or twenty-seven thousand employees.

Q. All of them engineers?

A. No, sir, about five hundred engineers.

Q. The Western Electric Company has got about five hundred? A. Yes, sir. Q. How many has the General Staff got?

A. About the same.

Q. Standing on each others' feet?

A. Yes, sir, and producing nothing, interfering with one another.

Q. Eating out of the trough? A. Looking for more pay.

Q. And your idea is that they are a bunch of fellows that are,that would be fired except Mr. Vail is to- tender hearted?

A. Too tender hearted to fire his own stenographer.

Q. Wouldn't even fire his own stenographer?
A. Somebody else took her.

Q. Suppose that some of these services were performed by these gentlemen present here that you have complimented so highly, wouldn't there be a duplication of services throughout the United States?

A. Yes, sir.

Q. Quite a duplication?

A. Yes, sir, they are all giving service. I can prove that 986 I was the first man to use a repeating coil.

Q. What is a repeating coil?

A. Transformer.

Q. What is it made out of?

A. Just plain wire and copper,-iron wire and copper.

Q. Is that the same as the Pupin coil?

A. It has the same characteristics. Q. What is the Pupin coil made out of?

A. Laminated wire, with copper connections.

Q. Do you know that they are made different now?

A. Yes, sir.

Q. They are made very much cheaper now?

A. Yes, sir.

Q. And we get the benefit of it?

A. You buy it of the Western Electric Company outright. It is the natural evolution of the manufacturer; they are the ones that should have done it. The most obvious thing was to reduce the cost, because when they started out they had enough iron in them to sink a ship.

Q. What did they used to cost?

A. About \$15.00, and now they are down to three or four dollars.

Q. We get the benefit of the amount of reduction?

A. That is true, yes, sir. The Western Electric Company would have given you that.

987 Q. If the Western Electric Company was selling us something for \$15.00, would it have been to their interest to sell it to us at \$3.00?

A. Yes, sir, they made just as much selling at \$4.00 as they would have at \$13.00.

Q. Would they give us the benefit of all the savings?

A. Yes, sir, they give you that price, plus cost, in every case.

Q. As a manufacturer you are making something in general use that you get \$15,00 for and you find a way of making it for \$3.00, so you could sell it at \$3.00,—do you immediately give your customers the benefit of that?

A. Yes, sir; the whole theory of this business is to popularize your price,—make people buy these things. What the traffic will bear, the price that will move these things enough to keep your machinery busy.

Q. The traffic will bear about twice \$3.00?

A. No, sir, these coils cost so much; therefore, by reducing the cost we give our customers the benefit of the savings.

Q. You would give them the benefit of all the savings?

A. Yes, sir.

Q. Anything that could be reduced and sold for \$3.00 you would sell for \$3.00?

A. Yes, sir.

Q. The temptation to charge a little more wouldn't cause

988 you to charge more?

A. No, sir, the charge is all based on cost plus. It is not a wild, disorderly thing, this charge proposition; it is well organized. We have cost cards on everything that we make. We have a certain price that we add to everything,—a certain percentage.

Q. Of course, it is all right for you to theorize-

A. (Interrupting.) I am not theorizing. It is the most practical thing in the world.

Q. It is all right for you to theorize about eliminating the 41/2% payment—

A. (Interrupting.) I am not eliminating it.

Q. We have to pay it?

A. You pay yourself,—it is yours, it is your own concern.

Q. The Southwestern Telegraph & Telephone Company has to pay it?

A. To whom?

Q. The American Telephone Company.

A. Who owns the Company?

Q. The American Telephone Company owns the majority of the stock.

A. All of it, except the "dummy" shares that are put here to comply with the State law.

Q. It might sell all the stock to somebody?

A. No. sir.

Q. Couldn't it sell the stock?

A. In Cleveland I think the boys had ten shares out of 989 a hundred and fifty thousand. Q. They could sell the Southwestern stock?

A. No, sir.

Q. Wouldn't you buy any of it?

A. No, sir, not under the present circumstances.

Q. Not a dime? A. Yes, sir.

Q. Suppose that \$10,000.00 worth of it was for sale,-would you buy it?

A. I couldn't just now. Q. If you had the money?

A. At what price?

Q. What price would you give for it?

A. Par. Q. Would you give par?

A. Yes, sir, eliminating all these foolish, long-distance contracts which you have with the A. T. & T., and let an honest dollar be an honest dollar, and it would be a good property.

Q. And if we had to have some more money you would have to

buy some more stock?

A. Yes, sir. It is a mighty poor Company that don't make its own stockholders put up its additional money. Our Kellogg stock,-we never had any trouble selling stock. Our own stockholders took the additional stock as fast as we could give it to them.

Q. In the telephone business isn't the real reason that in-990 dependent companies have failed so largely in this country is because of the fact that they didn't have money enough to

A. No, sir, the reason they failed, they lacked faith in the first place. A good many went into it to make money. They thought the manufacturer's profits—the main reason was your warfare through the banks, your warfare through the banks against the se-curities. The most deadly campaign ever waged.

Q. Who waged it?

A. The A. T. & T. Company.
Q. The A. T. & T. Company?
A. Yes, sir,—advertisied in the magazines, and even the bank examiners of the different States would come in and find the bank with some independent telephone bonds and he would say: "Get them out; the next time I come I don't want to see them."

Q. Why?

A. He had been told.

Q. Had been told by whom?

A. By the propaganda, by the advertising, that this independent business was a "fly-by-night" affair.

Q. If it had been really on a sound basis could anybody have

told anybody that and made them believe it?

A. It didn't make any difference, because so many of them are on a sound basis. The price of the independent stocks are a good deal higher than you now are. 991 Q. State bank examiners?

A. Yes, sir, State bank examiners and National bank examiners, and all of them. The State bank examiners objected to them in

Q. Objected to having independent stocks?

A. Yes, sir, and the last bank examiner didn't think much of those A. T. & T. 6's, either.

Q. How many different independent companies have been organized in the United States?

A. About nine thousand,-what you might call companies, and they are still running. Only in the larger territories you have eliminated them.

Q. Nine thousand companies?

A. Yes, sir; and three thousand are very successful independent telephone companies.

Q. Are they growing larger or smaller? A. Every one of them are growing larger.

Q. Any one of them bigger than the Bell Telephone Company was forty years ago?

A. The Johnstown Telephone Company has about 10,000 telepones, and their stock is worth \$260.00 a share. Ft. Wayne has 14,000 telephones and it is worth \$400.00 a share, and so many of them you can't buy stock in at all. 992

Q. They are all paying? A. Within their limits.

Q. Why are they limited? A. They have their territory that they don't care to get beyond,they might step on your toes or some neighbor's toes. agreement among ourselves to keep out of the territory. Another wonderful thing you did was to pick out the best spots and buy them

Q. And keep them from growing?

A. Yes, sir.

Q. The question of money hasn't entered into it at all?

A. No, sir; most of these companies could carry themselves and their credit is wonderful. I sold, in my little time with Kellogg, \$25,000,000.00 worth of goods, and the total loss was \$18,000.00.

A. Yes, sir, they pay better than you do.

Q. How long would it have taken the three thousand companies you are talking about to talk across the United States?

A. They don't talk across. Q. They don't connect up?

A. No, sir.

Q. They never would have?
A. They can talk if they want to. That is such an absurd commercial necessity that they don't use it.

Q. Does the city get any benefit of that?

A. I doubt if they have one call a month. On account of 993 the shortness of the day, the difference in time. When a man in San Francisco is going to his lunch, a man in New York is shutting up his office. It would be all right to have these long lines north and south.

Q. What is the difference in time in San Francisco and New York?

A. At 2.00 o'clock it is 5.00 o'clock. I was talking at 2.00 o'clock when he was going home at 5.00 o'clock.

Q. If a person had a relative in San Francisco that was in serious

danger-

A. (Interrupting.) He would use a telegram.

Q. He could use the telephone?

A. Yes, sir. That thing is another economic failure, another scientific toy.

Q. It is worth something to be able to talk to St. Louis from here? A. They are paying for it. They pay \$441,000.00 to talk to some-

body.

Q. It is worth something?
A. Yes, sir.
Q. Would it have been possible without the development of the General Staff?

A. The General Staff had nothing to do with that. Q. They didn't develop that at all?

A. No, sir, we developed the long line. We could talk to 994 Dickinson, in North Dakota, to Minneapolis, -400 miles, with an ordinary instrument.

Q. It would be better, in your opinion, to cut the telephone lines

in the United States all to pieces-

A. (Interrupting.) No. sir.

Q. And have local companies in each town?

A. It would do just as well. Q. It would do as well?

A. Yes, sir.

Q. And destroy the General Staff?

A. I don't care anything about them. They are tender hearted fellows and I wouldn't want them destroyed.

Q. I mean fire them.

A. I would hate to see them have to hunt another job and get the same salary that they are getting now.

(By Mr. Frank:)

Q. Mr. Kelsey, I remember one remark you made yesterday that patents never were an asset. You didn't mean that literally, did you?

A. Yes, sir, they never were an asset. They cost more to main-

tain than they ever sold for.

Q. The Automatic Telephone Company found their's an asset?

A. They spent more than \$4,000,000.00 maintaining their right.

Q. Didn't they make \$4,000,000.00 off the Bell Company?

A. No, sir. At the time we sold our patent for \$300,000.00, our total expenses were \$800,000.00 and I am telling you frankly that no business on earth ever made money on patent.

Q. And another criticism was we have too many records,

just what records have we?

A. You are over-analyzing yourself. You know yourself you have got office after office for old books and records and accounts that you don't know what to do with. It is a fine thing, but an ex-

Q. They are maintained out of the Inter-state Commerce Commission rules?

A. No, sir, you do a lot of analyzing unnecessarily.
Q. You don't think it is right?

A. It is a fine thing. You analyze your own business ver- nicely and you know within a month whether you are getting behind. Every time you lose a dollar it is out there in plain ink with a notice to the General Manager that he is behind. Q. It is desirable?

A. No. sir.

Q. I want to ask you something about the bugs that started to biting these cables.

A. Yes, sir.

Q. What do you know about that?

A. When Mr. — he is dead now,—he came to the Exposition at the World's Fair in 1903 and brought along a cable that had been punctured with the bugs, and we talked bugs for two or three 996 days and that is the first time we ever heard of it.

Q. Did he have a way of preventing the bugs biting the

cable? A. No, sir, not at that time.

Q. Did anybody discover a way of combating the bugs?

A. Later on we found it in California and the Independent Companies out there when they found a hole they repaired it.

Q. Is that the only way there is?

A. I am not an expert on bug-ology. Q. We have found a way of combating it.

A. It would be wonderful because you must have about three bugs in the course of a year in the United States.

Q. It is worth something?

A. That is making a mountain out of a mole-hill.

Q. You don't think it worth anything?

A. It is a nice thing to know how to do anything. Q. You haven't heard how to combat them?

A. I am not interested.

Q. Did you know these bugs stood on their hind legs and-A. (Interrupting.) Mr. Hester told us all about the bugs.

come twelve thousand miles to tell it, and that was new.

Q. You told us something about a cord somebody used in 1899. A. Your old tinsel cord was used in 1898 and you afterwards deserted that for the steel cord.

997 Q. The one we are using now?

A. No, sir, we all got to using the steel cord and we found out the resistance was around 20 or 30 and went back to something which had more cunductivity which was tinsel, brass and copper combined.

Q. The new cord was tested in 1913? A. Yes, sir. The Kellery C. A. Yes, sir. The Kellogg Company is making a cord that you couldn't tell from yours. The Kellogg Company has shopright on it because when you bought their shopright you gave them shopright on these things as well. You don't know it probably but the Kellogg Company can make anything the Western Electric can.

Q. I am asking about the cord. The evidence in the case shows

that the cord has been quite a saving.

The cord costs about sixty cents and you use one a A. Yes, sir.

If you can show me that that is a saving-

Q. (Interrupting.) Do you know how many we used before that?

A. I have more to do then study how long a cord lasts.

Q. How many did they use in Houston?

A. A cord ought to last twelve months on a board. And I know they lasted twenty-four months on the Duluth board.

Q. How long did they last in Houston?

A. A year, easily.

Q. Have you examined the testimony in this case to see what the saving was here on the new kind of cord?

A. Do you know we take the cord you folks throw away and buy them by the pound and give them a bath in gaso-998 line or naphtha and sell them absolutely new? You can't find anything wrong with them.

Q. They are so good that you can continue to use them?A. Yes, sir, for years.Q. You think that is no advantage at all?

A. No, sir. Your experts at Cleveland and Columbus tried to show a saving of \$2.00 and he made a rank failure.

Q. Who made the Tupin coil before the Civil War?

A. Professor Heverside-

Q. (Interrupting.) When did you find that out?

When I was studying Electrical Engineering in 1897.

Q. Before Professor Heverside?

A. No, sir. It come to him one day, I knew all these college professors and we talked these things over.

Q. You knew it before he did?

A. No, sir.

Q. Did you have the idea before he got it?

A. Dr. Cornell (?)-

Q. Did you know anything about it before he did?

A. No. sir. We were all college professors and we talked about these things.

Q. Professor Everside had his idea tested about twenty years ago. A. I imagine he, at that time, had a little more financial means

than most college professors have. He saw a little chance 999 of getting in.

Q. The Bell Telephone Company was foolish enough to pay him for his patent.

A. \$100,000.00.

Q. Bought it? A. Yes, sir.

Q. Do you know what they got?

A. They didn't get anything but an idea and a few little models. I saw them. I was present almost at the birth of this little baby you are talking about.

Q. They took the idea and-

- A. (Interrupting.) No, sir, Harvard University took it up and Dr. Cornell and his assistant-
 - Q. (Interrupting.) Jewett? A. He is an over-rated man. Q. A little over-rated fellow?

A. Yes, sir, and you can tell him so for me.

Q. I don't care to tell him.

- A. I am talking about Dr. Cornell's assistant. We were at the World's Fair together and we discussed it very much in detail, in 1904.
 - Q. Was he a Bell man?

A. No. sir.

Q. The general staff didn't develop that?

A. I think they took over Cornell's assistant. I can't recall his name.

1000 Q. It makes no difference. A. They have got him.

Q. Every time one of these fellows does anything that is real scientific, the Bell Company goes ahead and hires him?

A. They did that in the case of Forrest and Professor What's his-

name.

Q. Jewett?

A. He never discovered anything.

Q. He has done something.

- A. I am well acquainted with Jewett and all these fellows. know the faculty of all the Electrical Engineering Schools.
- Testimony in Support of Assignment of Error No. 4, Re-1001 lating to Reserve for Depreciation.
- 1002 F. M. Hoag, a witness for plaintiff, was sworn and testified as follows:

Direct examination.

(Questions by Mr. J. D. Frank:)

My name is F. M. Hoag, and I live in Dallas.

I am the Plant Supervisor for the Southwestern Telegraph and Telephone Company in Texas. I have been engaged in the telephone business twenty-one years. I entered the employ of the Bell Telephone Company in Cleveland, Ohio, in 1898, as a cable helper. I became a cable splicer, later the foreman of the Cable Department, and later General Foreman for the Cleveland Telephone Company. I learned to be a Cable Splicer from the experience which I obtained as a Cable Splicer Helper; I became a Cable foreman and had charge of a gang of about 30 men, doing underground cable, aerial cable, construction work of all kinds and cable maintenance work. The kind of cable was lead covered paper insulated telephone cables, carrying insulated wires.

As General Foreman for the Cleveland Telephone Company, I had charge of all the outside construction work and worked a force of from 100 to 350 men. In 1902 I came to Texas and went to work for the Chief Engineer of the Southwestern Telegraph

1003 and Telephone Company at Dallas, as an inspector in the Engineering Department. As an inspector, I assisted in doing field work and other work incident to the preparation of plans and estimates covering telephone construction work of all kinds.

I later became a Consulting Engineer for the Southwestern Telephone & Telegraph Company, and after about six years was made Assistant Engineer. Prior to the time I was made Assistant Engi-

neer I was a Construction Engineer.

In my position as a Construction Engineer, I had a force of about 10 engineers; did the field work incident to the preparation of the plans, prepared estimates covering all kinds of outside telephone construction work throughout the State, that is, throughout the State of Texas, and also did a great deal of work in Arkansas.

As Assistant Engineer, I supervised a force of engineers engaged

in that kind of work.

In 1913 I was made Division Plant Superintendent for the Northeast Texas Division of the Company with headquarters in Dallas, having charge of all of the construction and maintenance of the telephone company's property in the Northeastern portion of the State, and had an average of form five to eight hundred men working for me in that particular section of the State. That embraced the northeastern section of the State, from a point South at about

Mexia and Teague, from a point on the West from about 1004 Gainesville, and East to the Louisiana State Line, and North

to the Red River. There were 75 telephone exchanges, including the telephone exchange in Dallas, with approximately 60,000 subscribers connected. As Division Plant Superintendent, I had charge of all the maintenance of that property and also had charge of the engineering work incident to the new construction, which we did each year.

The value of the property which was constructed under my supervision during that period of time in that particular territory was approximately one half million dollars. It was all kinds of construction work,—new work, replacements, enlargements and addi-

tions.

All of our work, which costs in excess of \$300.00 is handled under approved estimates. We first prepared our plans, make our studies;

prepare our plans and then prepare an estimate of the cost of the work which we desire to do. That estimate has to be approved by our management before the work is undertaken. It is first approved by me,-it is prepared under my supervision and I make the estimate; I then present that to some higher official for his approval and when it is approved, the work is authorized and we order the material and proceed with the work. These estimates allow for a variation of 10% in the cost. We are not permitted to exceed the estimated cost by over 10% without asking for additional appropriations, and ordinarily, of course, we would do the work within the appropriation as covered by the original estimate. As

Division Superintendent in Dallas for three years I had charge, in addition to the engineering and construction and the maintenance of the property, I also had charge of all the ac-I had a Division Accountant and we had to make final reports upon the completion of all estimated work and, of course,

had to analyze the cost very carefully.

Q. You stated that you were allowed a variation of 10%, that is, whenever you made an estimate on a particular piece of work, that you were supposed to come within 10% of your estimate in actually doing that work?

A. And would usually do so, of course.

The actual cost of doing the work usually came out within 10% of what we had estimated the cost would be. Work handled under normal conditions, we would invariably come out within our esti-If we had storms, or floods, or something of that sort, then

we might spend more money than we estimated.

I stated that about seven and a half million dollars worth of work was done under my supervision during that length of time. sent to San Antonio in 1907 as Division Superintendent of the Southwest Texas Division, and that embraces the southwestern portion of the State, extends on down to the Mexican Border and as far North as Bartlett, just North of Austin and comes as far East on the South-

ern Pacific, as Victoria. There are 76 exchanges in that 1003 Division with approximately 46,000 subscribers, serving approximately 46,000 telephone subscribers, including the

City of San Antonio,

I had charge of all the repairs, maintenance, new construction work, and so forth in that Division, just as I had in the Northeast Texas Division and in addition, I represented the Southwestern Telephone and Telegraph Company with the Southern Department. Army Headquarters officials. By that I mean the headquarters of the Southern Department of the Army are at San Antonio and during the Army activities we built a considerable amount of telephone plant in the State of Texas to serve the cantonments, the Av-ation Fields, Balloon Schools, etc., and I handled all of the negotiations with the Signal Corps, the Southern Department Signal Officers at San Antonio for that work, looked after the payment of our bills, went over very carefully with the Army Officers all of the proposed expenditures as to cost and supervised that work generally for the telephone company. In other words, I made an estimate of what

it would cost to put on a telephone exchange at one of those cantonments down there for the United States Government. Went over the figures with Army officers and then handled the payment of those bills after the work was actually done. Got their a-proval of the expenditures before the work was actually started, then handled the work and later assisted in the collection of the money. We had to account to the Government for how much money was expended down to the last dime. They checked all of those matters over carefully with me; they checked all items of material and all costs very carefully.

1007 We did a very satisfactory job with the Army and when I turned that work loose a few months ago, I think the Army only owed us \$5,000.00 out of many hundreds of thousands of dollars

which we spent for them.

In the preparation of those estimates, we necessarily have to be very careful and make them accurate in that the Army considered that when we made an estimate of what the work would cost, that when we had entered into a contract with them to do the work for that amount of money and the work was invariably done at our estimated cost.

I had charge of all that construction work down there and that was

done under my supervision.

After the Armistice was signed, I was moved back to Dallas as Plant Supervisor for the State of Texas as a whole, in which position my duties have been rather general. That is the position I occupy at the present time. I was sent out to the Oil Fields in December, 1918, and made a careful general survey of the telephone needs in the Oil Fields, also appraised a number of telephone properties and later purchased those properties for the Southwestern Telegraph and Telephone Company. Also, decided as to what additional toll lines were required in the oil fields and what new exchange work was needed at the exchanges that were purchased. In that section, I appraised some ten properties and purchased something over \$300,-000.00 worth of small properties.

In all I have something like twenty-one years' experience in the telephone business, during which period of time, I have made estimates as to the cost of property and have actually constructed the property and have had occasion to check my appraisals

with the actual cost afterwards.

1009 Direct examination.

(Questions by Mr. J. D. Frank):

Q. Take up one or two items under station equipment, Mr. Hoag,

and explain that.

A. Item 1, under Station Equipment.—Subscribers' Station apparatus, because its location at subscribers' premises and on account of the number of disconnections, removals and changes in location, is subject to a great deal of injury.

Q. Are you constantly making those renewals—removals and

changes for your telephone subscribers in Houston?

A. Yes, sir.

Q. Causes a great deal of wear and tear on the equipment, does it? A. Yes, sir. Item No. 2: Although the apparatus is repaired as far as practicable, this process of repairing cannot be continued long and the sets must eventually be junked.

Q. It is necessary to junk a certain amount of those instruments each year when you have had sets in operation a great many years?

A. Yes, sir, necessary to junk a large number each year.

Q. Take the last item under Station Equipment.

A. No. 6: Sub-station sets and private branch exchange switchboards are sometimes destroyed by fire.

Q. Explain that a little further.

A. A considerable number of substation sets and private switchboards are destroyed by fire in the course of a year. Even where the fire is not large, the sets are so damaged by water that they have to be junked.

Q. Sometimes a residence or business house completely burns up, and you would have one or more telephones destroyed in there if it

happened to be a subscriber?

A. Yes, sir, that frequently happens.

The Master: Do you carry your own insurance on those things? Mr. Hoag: The reserve for replacements in our insurance to protect the property.

The Master: You don't deal direct with a regular insurance com-

pany in your business?

Mr. Hoag: No, sir, this reserve does that. That, in effect, is what it is, it protects the property.

Q. Take up one or two items under Buildings.

A. Item 1, under Buildings. "Inadequacy" is the factor which is the largest effect. That has been shown in the exhibit subhas the largest effect. mitted covering life of central office buildings in Texas.

Q. And you have had that occur here in Houston several times,your business has outgrown the building in which the equipment

was located?

One good example is the original Taylor Central Office building, which was originally at Center and Taylor Streets. A No. 9 switchboard was installed and we outgrew the switchboard and the building and had to build a new building at Harvard and 16th in Houston Heights.

Q. Take the last two items on that and explain that.

A. Item 7: As Improvements in fire prevention construction are made, considerable reconstruction work is required to keep the building up to the most modern standards; for example, wire gladd windows, fire cutoffs, metal doors and automatic shutters. explain that by saying that we have men who make an inspection once a year of the central office buildings, and they usually recommend what the conditions warrant, of course, in changes of the buildings which make them nearer fire-proof. Those changes would be such changes as have developed during the year, the preceding year.

Q. Take up the last item; Item No. 8.

A. As regards salvage value. It must be remembered that telephone buildings are of special design and not only may the floor plan be unsuitable for other uses, but the buildings are special as regards strength of floors, height of stories, heating, plumbing, high basement, etc.

Q. Is that due to the fact that you must make provision for special

equipment which goes in the buildings?

A. Yes, sir. A good example of that is in the strength of the the floors of the building. If I am not mistaken the ordinary building is constructed to carry a strain of some 80 to 100 pounds per square

foot of floor space, whereas our buildings have to be constructed to carry approximately 300 pounds per square foot of floor space to care for the apparatus and equipment that

is in the buildings.

Q. You have spoken of replacements made necessary by public requirements. Have you prepared an exhibit which gives some examples of these changes in Houston?

A. Yes, sir.

Mr. J. D. Frank: We offer that exhibit in evidence as Plaintiff's Exhibit No. 28.

(Thereupon said exhibit was received in evidence and marked Plaintiff's Exhibit No. 28, as requested.)

Q. Mr. Hoag, in just a few words, and without taking up all these

pages, tell us what is shown by this exhibit.

A. This exhibit is examples of replacements made necessary by public requirement in the Houston Exchange. The exhibit is not complete and is only illustrative.

Q. That is for what period, what length of time did you cover,

Mr. Hoag.

A. We picked out many things that had happened between 1911

and 1919.

1013

Q. Is this supposed to cover all those changes, or have you merely prepared this as examples of changes which have been made due to that fact?

A. This is merely prepared as examples of changes due to that fact and it was prepared with reference to the underground conduit

particularly.

Q. Al- right. Just mention one item and tell us what the

last page is.

A. The first page recites the work necessary in connection with the Main and Milam Street vridges over Buffalo Bayou. To care for that work made necessary on account of that bridge construction an expenditure of approximately \$21,000. was incurred, and the cost of the original plant which was displaced amounted to about \$20,000.00. The approximate salvage of that original plant was \$8,400.00 leaving in that particular case a charge against reserve for replacements of approximately \$12,000.

Q. All right. Now take up the last page and explain what total

amounts have been charged to your reserve for replacements due to

the changes which are set out as examples in this exhibit.

A. The total plant displaced, as covered by this exhibit, amounts to \$41.525. That had a salvage value of \$16,859, leaving the amount chargeable against reserve for replacements of approximately \$25,000.00 a little less than \$25,000.

Mr. J. D. Frank: I believe that is all on that,

Cross examination.

(Questions by Mr. Howard:)

Q. Mr. Hoag, did you prepare this exhibit No. 28?

A. Did I personally prepare it?

Q. Yes.

A. It was an exhibit which was in part prepared at the time 1014 this case-

Q. (Interrupting.) What is it prepared for?

A. To show examples of replacements due to public requirements in Houston.

Q. It has nothing to do with your reproduction theory at all?

A. It is in connection with the reserve for replacements. Q. In other words, all this vast detail has been gone into and offered here merely to fortify, and is cumulative of these other things that you say justify you in setting aside 6.33 per cent for

A. It is in support of the reserve for replacements.

Q. You would have adopted the same rate of 6.33 if you were

valuing the Beaumont plant and putting in a rate there?

A. No, sir, I am not sure what the rate would be in Beaumont, although conditions are very similar in Beaumont to what they are in Houston. A better example might be to say Amarillo.

Q. Mr. Hoag, in your set-up of this depreciation, 6.33 per cent, I notice that you have set up land as zero. The land has appreciated, hasn't it?

A. Has appreciated?

Q. Yes, sir. A. Yes, sir.

Q. You didn't set off, or allow for the appreciation of the land, as against the depreciation of the other parts of the property, in arriving at a fund that would keep this property—the capital intact?

A. Land not having depreciated, it was not necessary to set

1015 aside any fund.

Q. In appreciating it tended to counter-balance the depreciation of the other parts of the plant? A. No, sir.

Q. You have got a plant here consisting of real estate and equipment, part is appreciating and the other part is depreciating. is a counter-balancing effect going on all the time?

A. No, sir, the reserve for replacements amounting to 6.334 per

cent is a fund-

Q. (Interrupting.) I under—it is a fund. I didn't ask what that was, I understand what it is. It is a fund set aside to take care of and keep this plant up to the value of the original investment. Then, I ask you this, just as a matter of valuation: If you have a plant here and there is no fund or anything of the kind provided for—to reduce the thing down so you will understand it perhaps a little better, take the example of a residence, the lot is worth five thousand dollars and you put a residence on it worth ten thousand dollars. Then time goes on and the lot appreciate in value until it is worth ten thousand dollars and the improvements depreciate until they are worth only five thousand dollars. Then you have a counter-balancing effect there, do you not, and at the end of the five years, say, the property is worth just what it was when you started?

A. But you cannot spend that appreciation which has been realized to care for the depreciation of this property, and that is what this

fund is for.

Q. Aren't you mistaken about that? This fund is to take 1016 care of replacements, to keep the plant in working order, you pay that out of your fund?

A. Only in part.

Q. At the end of your term, at the end of the life of the plant, when you find you have got a plant that is worn out, so far as the equipment is concerned, but you find the real estate has advanced, one has worn out and the other has appreciated in value, the amount necessary to make your investment whole would be the difference between the appreciation on the real estate and the deterioration of the plant, would it?

A. No, sir, this fund is spent from day to day. The appreciation

of the property cannot be spent in that it is not realized.

Q. I understand, but you have it in value at the end of the life of the utility.

A. There is no end to it.

Q. That is the theory that it is set up on, taking care of the investment so that at the end of the term of the life of the plant, that it will not have been worn out in the public service without having something to recompense the investor.

A. The fund is to protect the property. Q. To protect the investor, isn't it?

A. It is to protect the subscribers and customers.

Q. But at some time it will come to a point where it is worn out and its life is at an end, and then comes the accounting—

A. (Interrupting.) There is no end to it.

Q. If you take that tehory of it——

Mr. Frank: Let him explain it.
Mr. Howard: He says there is no end to it. If he says that, I am willing to discontinue the inquiry along that line with

him.

Q. You have set up here, I believe, 300 different cities, in which you have shown depreciation of your central office equipment.

A. That is in switchboards, yes, sir.

Q. Mr. Hoag, you don't claim that these figures here show the service of these respective switchboards, for instance, in Column 4, you don't claim that they are the correct figures upon which to base the depreciation of those particular items, do you?

A. They are the correct figures, yes, sir, except to this extent,

that salvage does not enter into it.

Q. And salvage does enter into it?

Yes, sir, which I explained yesterday,

Q. But you didn't undertake to compute the salvage with any such percentage accuracy that you could add it to these years and get a correct depreciation computation?

A. It was not possible to determine the realized salvage on each

of these switchboards

Q. Then, as a matter of fact, this set-up you have here is misleading and doesn't indicate anything. It just simply means that at certain times, for certain purposes you have taken out switchboards and put it into your supply account. That is what it means,

A. No, sir, it means exactly what this exhibit shows, that

these boards have been removed for various reasons.

Q. From this particular service, but it doesn't indicate in any way that these particular things had been worn out?

A. Many of them were worn out, yes, sir.

Q. But these figures here do not indicate that they have worn

out, do they?

A. This exhibit does not show what became of the particular items of material, the particular switchboards. Some of them, were worn out,-some were junked, and some were rebuilt and reused. In some cases junk value was realized and in other cases the boards were in such condition that greater salvage was realized in that they could be re-used.

Q. So we come back to the first proposition that these figures you set up as indicating the life of these particular switchboards, does not indicate it, and does not form any basis upon which you can

compute it?

A. It doesn't show what was realized in a way of salvage, no,

sir, it don't show that.

Q. And until you can realize that, these figures do not even approach accuracy?

These figures are accurate as shown.

Q. Tables and statement as to what you have done with certain switchboards in certain cities, but we are talking about figures, the rate of depreciation upon these particular switchboards, and because you took the switchboards out of the central office equipment here and put it in your supply account, when you have had it in use three years, by setting down three years you don't get anywhere in

determining the life of that switchboard?

1019 A. That matter may be explained by saying that this exhibit shows an annual life of 6.83 per cent, and in figuring our depreciation reserve we have figured on a life of ten years. Now, the difference between the life of that board, as shown, and the life as figured, at ten years, would just about account for the

Q. That is not the thing we are trying to get at. We are trying to get at the rate of depreciation. Why put in these figures at all if you know from actual experience the average life of switchboards to be ten years? Why introduce a set-up here that indicates the life only six years?

A. This is the average life of switchboards-

Q. (Interrupting.) This average life you have got by this computation here, is that the average life of switchboards?

A. Of those boards, in the places where they were installed, yes,

sir

Q. You mean to say, rather, that it is the average time you used them in service in those places?

A. Yes, sir, and it shows the reason form their removal.
Q. But when you took them out you didn't junk them?

A. Many of them were junked, and many were salvaged and reused.

Q. And that you haven't undertaken to compute?
A. No, sir, but I just explained that this shows an average life of 8.83 years, whereas we are figuring in our depreciation reserve an average life of 10 years, a difference of something over three vears.

Q. And then were these figures set up for the purpose of having it appear that although the average life is six years, that 1020 this company in magnanimity had included a life of ten

years for the life of these particular articles?

A. No, sir, not for any such purpose as that.

Q. What are they set up for?

A. To show the reasons why switchboards are replaced. the particular thing they were introduced for, and next they were intended to show the average years of life that a switchboard was installed, was in place, and it does show those two things.

Mr. Duls: That exhibit represents the experience of the Company?
A. Yes, sir.
Q. Turn to your San Antonio set-up there, will you? I notice San Antonio Common Battery was taken out after it had been in service ten years. What did you do with that switchboard?

A. That switchboard was junked. It was an old panel, 5,000 line capacity, No. 1 Common Battery Switchboard, taken out of the old

San Antonio Building on Travis Street.

Q. Have you set up the one in this statement here that you transferred from San Antonio and set up in the Taylor Exchange in Houston, and an inventory thereafter made entered it as a new switchboard?

A. That was a different type of No. 1 board.

Q. Have you set it up here? A. I don't think it is on here.

Q. Why wasn't it set up on here? Did the company pick out only the ones that had comparatively short service and set them 1021 up here?

A. This list is not complete.

Q. How was it made up? You have already told us that you are showing a six year life by actual experience from this set up. as I understand you, this is not even a tabulation and computation based upon your actual experience because you haven't set up all of your switchboards in different planes?

A. I say it is not complete.

Q. And doesn't mean anything at all. That is the great reason why it doesn't mean anything at all.

Mr. Frank: He told you why he set it up.

Q. He made a comparison between this figure and the depreciation reserve figure.

A. It is merely examples. I would like to explain the effect of

salvage again, if I may?

Q. I understand what salvage is. That is what is left of equipment when it ceases to be used as a functioning part of the equipment, there is no question about that, and whether worth ten cents or a hundred dollars it is salvage nevertheless, but what I am getting at now is why you come in here with this kind of a set-up and compare it with your original depreciation, when it is not accurate, when it is admitted to be not accurate.

A. It is stated it is only examples of replacements, and it also states that it shows the reasons for replacements, and shows-

1022 Q. (Interrupting.) Right there. If made only to show reasons for replacements, why did you say inadequacy and obsoleccence, and why did you try to get the average time if you didn't want it for comparative purposes?

A. The average time is interesting, and it does mean something.

Q. Bearing upon this question of depreciation? A. It means something in connection with that.

Q. We are not here to be interested as much as we are to get at the facts

Mr. D. A. Frank: We object to counsel arguing with the witness and making side-bar remarks that have nothing whatever to do with the matter he is investigating, and I want to object to any such sidebar remarks.

Mr. Howard: I am not making any side-bar remarks. They brought in this set-up showing the time which they have used these switchboards and the reason why they are discontinued, and then they strike an average time of the life of the equipment used in these different cities. He says it is interesting, and I say we are not raising questions of interest, but we want to know what relation it bears to the depreciaton reserve.

A. This shows an average life of 6.83 years is salvage value and is not considered. Then we would have to have a higher rate of depreciation on the central office equipment in that our reserve, as set up for central office equipment, contemplated a life of 10 years, whereas this exhibit shows for this number of switchboards that have

been replaced, that the average life was only 6.83 years.

1023 That on the the fact of it shows that we have considered the effect of the salvage on these switchboards in figuring our depreciation rate of 10%.

Q. Wouldn't that be true if you had set up all the switchboards you had in use, and not taken what I judge from your answers, was

a hand-picked selection?

A. They are not hand-picked.

Q. Why didn't you get the San Antonio switchboard in that you

installed in the Taylor Exchange?

A. I don't know. There are many other switchboards that have been replaced in the State of Texas not included in here. It is rather a difficult job to build up such a record as this, and some must have been overlooked.

Q. Yes, sir. You speak of salvage and junk value of these different things; isn't it a fact that a great part of these things you have taken out after they have been in service short periods, are taken out of that particular Exchange and re-installed in another exchange of the same Company where they are fully adequate?

A. Yes, sir. It is also a fact-

Q. (Interrupting.) In this set up do you show any places where

the equipment is used in different places?

A. No, sir. But in such cases the initial installation cost of the switchboard, plus the cost of removal, plus the amount of depreciation and so forth, due to wear and tear and that kind of thing, would be charged to the reserve for replacements, and then this switchboard when re-installed would be re-installed at the current price of that switchboard.

Q. Ain't some of these switchboards taken out and put in 1024 other places and inventories and carried as new equipment?

A. They are all re-installed at the current price of the new equipment, certainly. They have to do that. All other material is handled in like manner.

Q. If you put in a switchboard here and use it for four years and it becomes inadequate and you take it over to Richmond and put it in there,—you put it in there as a new switchboard?

A. Yes, sir, this is what would happen-

Q. (Interrupting.) And when you value the Richmond property, you set it up as a new switchboard and value it as such?

A. Just like a pole that was taken down and was in good condition. When that was re-used, as material, it would be priced at the

current price.

Q. You know it to be a fact that they did take a switchboard from San Antonio, probably out of one of the central offices over there, and brought it over here and installed it in the Taylor Exchange after it had been used several years, and then in the inventory in this very rate-hearing it was inventories and appraised as new equipment. Do you know that as a fact?

A. No, sir, I don't know that as a fact.

Q. Mr. Hoag, have you before you the Interstate Commerce Commission Rules?

A. No. sir.

Mr. Duls: We have it. This is Exhibit No. 11.

Mr. Howard: Give it to Mr. Hoag.

1025 Q. What is the number in which is carried "Replacements"—it would be under "Operating Expenses"—turn to that.

A. It is Item 23 on Page 67.

Q. What does it say you can set up there in the way of maintenance and repairs?

A. "Depreciation of plant and equipment.-Telephone Com-

panies——"
Q. (Interrupting.) Is that under "Operating Expense?"

A. Yes, sir.
Q. Or under the depreciation reserve?

A. It explains itself.

Q. Before we get started, as I understand that, it sets up what are operating expenses, and then subdivided operating expense under

different heads, does it not?

A. This explains itself. "Depreciation of plant and equipment.— Telephone Companies should include in operating expenses depreciation charges for the purpose of creating proper and adequate reserve to cover the expenses of depreciation currently accruding in the tangible fixed capital. By expense of depreciation is meant—(a) The losses suffered through the current lessening in value of tangible property from wear and tear, (not covered by current repairs); (b) Obsolescence or inadequacy resulting from age, physical change, or supersession by reason of new inventions and discoveries, changes in popular demand or public requirements; and (c) Losses suffered through destruction of property by extraordinary casualties."

Q. Well, the-, these things of obsolescence and inadequacy, as you run into them when operating your plant, you charge them off to operating expenses and pay them right along out of the earnings of the company and they disappear as operating expenses the same as the salaries paid to your operators, don't

they?

A. Out of the money earned by the telephone company in the rendering of service a fund is set aside to care for these expenses.

Q. There should be no set-up then for it. These are operating

expenses we are talking about.

A. (Reading.) "Depreciation of plant and equipment—Telephone companies should include in operating expenses depreciation charges for the purpose of creating proper and adequate reserves to cover the expenses of depreciation currently accruing in the tangible fixed capital."

Q. Aren't you under the operating expenses allowed to pay out the repairs and maintenance, even though it may partake of the nature of replacements, in order to keep the plant functioning?

A. "Repairs" may cover that. That is on page 66 of the I. C. C. handbook, Item 21, Repairs defined,—"Repairs, as used in the text of the various operating expense accounts, includes ordinary and

extraordinary repairs." Then they go on and detail what those things are, the day to day up-keep and maintenance. And then here it states, about the middle of the page, "Ordinary repairs are not required to be taken into account in fixing a rate of depreciation."

Q. Is there any discussion of what constitutes ordinary repairs,

does it define ordinary repairs?

A. Define ordinary repairs?

Q. Yes, does it do that?

A. Yes, sir.

Q. Let us see what they are.

A. (a) "Testing for, locating and clearing crosses, breaks, grounds, and other line troubles, including routine work intended to prevent such troubles, as, for example, pulling up slack, tightening guys and re-setting guy stubs, trimming trees, straightening poles and cross arms, and cleaning and adjusting apparatus." "(b) Replacements of minor or short-lived parts of structures, equipment or facilities." "(c) Replacements of minor parts of wire plant or equipment, made necessary by reason of faculty adjustments, excessive strains, mechanical injuries, or other minor casualties, not provided against in the charge for depreciation of plant and equipment; (d) Rearrangement ad changes in location of plant, except subscribers' station equipment (for which a special account is provided). This included re-arrangements of circuits, re-association of party lines, re-arrangeing grouping of trunks and calling circuits, re-cross connecting on distributing frames, re-running jumper wires, underlining switchboard jacks, etc., together with materials used for such purposes which do not add to the tangible value of such plant; (e) Recovering salvage and removing retired or abandoned property (except subscribers' station equipment) when such costs are not provided for by the depreciation reserve."

Q. My understanding of it was instead of carrying depreciation reserve under operating expense—they seem to put that as a

1028 sub-head of operating expense?

A. Yes, sir.

Q. I didn't understand it to be that way. But how, this operating expense, I spoke of a while ago, that is paid out just as your ordinary expenses,—they do not go into any reserve you just pay them and get rid of them out of the earnings of the company as you go without affecting your depreciation reserve?

A. Yes, sir.

Q. There are some considerable things in there that could be charged to operating expense, like where you re-route your lines, and where you make these replacements, and trimming trees. That is one thing that is paid out of operating expense, but in your set-up you sought to fortify your depreciation reserve by an item of that kind,—trimming trees where wire runs through them.

A. No, sir. I attempted to fortify the reserve by saying where

A. No, sir. I attempted to fortify the reserve by saying where wires ran through trees they were subject to great wear, wore out more rapidly. It made necessary the replacement of the wire.

Q. You would have to insulate the wire again, or put in a minor

piece of wire?

A. No, sir, we would have to replace a certain length of wire. It might be possible that an ordinary little wear of the insulation could be repaired, and if that was done it would be charged to repairs. If the whole length of wire was replaced, that would be charged to depreciation.

Q. They don't undertake to define what "minor repairs" are?

A. I just read you a considerable amount of detail. Q. They don't put any real limit on it?
A. Yes, sir, they do.
Q. Just read it again.

A. You don't want me to repeat all of it?

Q. No. sir.

1029

A. Section B: "Replacements of minor or short-lived parts of structures, equipment, or facilities."

Q. Is there any limitation on that other then the word "minor."

A. The limitation is established in this way: Minor or short-lived parts are defined so that as they are repaired the charges are made to repairs and maintenance. Also, major items of plant are defined, and where they are replaced the charges are made to reserve for replacements.

Q. Mr. Hoag, you spoke yesterday about commissions and courts allowing certain percentage, did you not, around 6 and 7 per cent?

A. I don't think I did. I think Mr. Frank did.

Mr. Duls: I did, Mr. Howard. I said it amounted to an average between 6 and 7 per cent.

Mr. Howard: Those were in cases where the maintenance repairs had not been taken care of under your Interstate Commerce Commission method?

Mr. Duls: No, sir, they were all telephone cases that have arisen since the Interstate Commerce Commission has come into effect. All recent telephone cases. Everyone of those cases were under the

I. C. C. system of accounting.

1030 Mr. Howard: When were those rules put into effect?

Mr. Duls: In 1913, first of January.

Mr. Howard: And these cases you referred to are since that time? Mr. Duls: Everyone of them, yes, sir.

Mr. Howard: And the books were kept under the Interstate Com-

merce Commission system?

Mr. Duls: Yes, sir, we used particular care in preparing that list of cases to get them just that way, and they are all telephone cases. They do not include gas, electric light and street railway company cases at all,-all telephone cases.

Mr. Howard: I think that's all, Mr. Hoag.

Redirect examination.

(Questions by Mr. J. D. Frank:)

Q. Mr. Hoag, counsel has questioned you with reference to appreciation in the value of land, and has asked you if you have made any allowance for that in your reserve to take care of replacements.

Does the fact that the land has appreciated prevent the plant from depreciating?

A. No, sir.

Q. You have to use that land in connection with the operation of this plant, don't you?

A. Yes, sir.

Q. If you have a lot now and put a house on it worth ten thousand dollars, and say the lot originally cost two thousand dollars, and in the course of years it appreciated to the extent of one thousand dollars, and so the lot is then worth three thousand dollars, and you have to repaid a certain part of the house, would the fact that your lot appreciated in value give you any money with which to repair that part of the house?

A. No, sir.

Q. And that is the same proposition with reference to this telephone property, isn't it?

A. Yes, sir.

Q. Does your plant, as a whole, ever wear out?

A. The plant as a whole does not wear out at any one time, it it being replaced from day to day, week to week and month to month.

Q. Now then, what effect on your plant with reference to giving service would it have if you, on account of appreciation in some parts of it, did not set aside any reserve for replacements and didn't make any replacements?

A. Then the plant would wear our and go out of service.
Q. Even thought a certain part had appreciated in value?

A. Yes, sir.

Q. Counsel has questioned you with reference to the salvage value of switchboards. Can you tell us what percentage of the cost of assembling and placing a switchboard is represented by labor?

A. Approximately 50 per cent. That is, labor and incidental

costs.

Q. Then, is the salvage value high or low when you remove one of those boards?

A. The salvage value is low. I testified yesterday that if this Houston Preston switchboard were removed that the realized salvage would be approximately 20 per cent of the original cost.

Q. Now, in the exhibit which you prepared showing the removal of certain boards, did you intend to put that in as being a complete

record of all the boards which have been removed?

A. No. sir.

Q. Merely used to set out some examples of boards which have been removed?

A. That is all, yes, sir.

Q. You never made the statement that included all of the boards?

A. No, sir.

Q. In the list all of those boards were actually removed?

A. Yes, sir.

Q. For the causes set out in that exhibit?

A. Yes, sir.

Q. When each one of those boards was removed, you not only had

to charge your reserve for depreciation with the original cost of assembling and installing those boards, but also had to charge your reserve with the cost of removing those boards, did you not?

A. Yes, sir and in addition had to charge the reserve for replace-

ments with the depreciation of the switchboards.

(Examined by Mr. Howard:)

Q. I asked him a while ago in speaking of this set up of 1033 these different towns and the switchboards if he ever made the statement that he intended to include all the switchboards and he said no. I will ask you to turn to the heading which explains what this set-up is.

A. The heading reads: "Life of Central Office Switchboards in Texas." It might have been better to have added to that heading

"Examples."

Q. In your opinion wouldn't that heading convey to the mind of any reader that this was intended to be, and was, a set-up of all the switchboards,-the life of all the switchboards, in Texas?

A. If the word "all" had been added in the heading it would be

specific. It might be a bit misleading as it is.

Q. It don't say "part," it says "Life of Central Office Switchboards in Texas" and that means all.

A. That means the life of the boards as listed.

Q. It doesn't say that. It doesn't say a partial list,—it says, "Life of Switchboards in Texas."

But it does not say specifically all of the switchboards in Texas.

Q. It doesn't emphasize that point.

Examination resume-.

(By Mr. J. D. Frank:)

Q. Counsel has also questioned you with reference to the proposition of taking a board and placing it in the Richmond, Texas, ex-Say a board was taken out of the plant in Houston in 1916 and was placed in the Richmond Exchange. If thereafter you were

making an inventory of the Richmond exchange would you 1034 appraise that board as a new boards,—or would you appraise

it in its depreciated condition?

A. In appraising any such property it would be appraised on the basis of the reproduction cost new, and then to get at the value of the switchboard, in like manner as to get at the value of the rest of the property, the accrued depreciation would be deducted from the reproduction cost new.

Q. That is what you have done in the case of Houston, is it not,

Mr. Hoag? A. Yes, sir.

Q. Mr. Hoag, if you had to spend some money in Houston this week for replacements, when would you say that property which is displaced was installed in Houston?

A. Dealing with the plant as a whole I should say that property

was installed about 16 years ago.

Q. Then, you are not only taking care of replacements which are occur-ing now of property which was installed years and years ago, but you have got to take care of property which will wear out in the future?

A. Yes, sir.

Q. The reserve for replacements which you are setting aside at the present time is based on the property which you now have whereas the replacements which are being made from day to day are as to property placed here years and years ago?

A. Yes, sir.

Q. Counsel has questioned you with reference to the expense of maintenance and depreciation. Both og those are treated as operating expenses, are they not?

A. Yes, sir.

Q. And that is in accordance with the system of accounting 1035 prescribed by the Interstate Commerce Commission?

A. Yes, sir.

Recross-examination.

(Questions by Mr. Howard:)

Q. Where does the age of this equipment appear in your appraisal or inventory?

A. The age?

Q. Yes, sir.
A. The existing equipment in Houston?

Q. Yes, sir.

A. The age does not appear.

Q. You haven't undertaken to set that up and show its condition? A. The per cent condition appears. The per cent condition was obtained by a physical inspection as explained vesterday.

Q. You have ignored entirely the age of the plant in determining your appraisal?

A. I considered the actual condition of the property as found when I made the inspection.

Q. You ignored the question of the age entirely in making your appraisal?

A. Yes, sir,

F. M. Hoag, who had been previously sworn as a witness, 1036 was recalled in rebuttal by the Complainants, and in answer to questions propounded testified as follows:

Direct examination.

Questions by Mr. J. D. Frank:

Q. Mr. Hoag, you have already been sworn in this case, of course? A. Yes, sir.

Q. You heard the testimony of Mr. Kelsey with reference to the proper amount to set aside for annual reserve for depreciation?

A. Yes, sir.

Q. You heard what he had to say with reference to \$4.00 per station being sufficient for the Keystone Telephone Company at Philadelphia?

A. Yes, sir.

Q. Do you know anything about the character of the Keystone telephone plant in Philadelphia as compared to the character of the

telephone plant in Houston?

A. I saw the Keystone plant in Philadelphia in 1913; went over that plant, and also the Bell Plant at the same time. Both plants are eighty to eighty-five per cent underground. That type of construction,-that kind of construction is made necessary on

1037 account of the aerial wire tax which the city of Philadelphia has imposed, which, as I recall it, amounts to \$3.00 per mile of aerial wire per year. That means that an aerial wire construction cannot be placed, and as a result of that, both the Bell Plant in Philadelphia and the Keystone Plant are practically completely The underground cables, for instance, extend into the residence districts, and they use what they call -- and cable in the residence sections. In the residence sections of Houston we would build pole lines and string aerial cable, aerial wire, and place drop wires instead of extending through under-ground lines direct from main conduit lines into buildings or outside of buildings, on to - and it makes for a much lower rate of depreciation.

Q. Then you would naturally expect to have a lower reserve for depreciation for a plant of that kind than you would expect to have

for a plant of the character of the plant here in Houston?

Taking the composite rate of depreciation for Houston and the composite rate for Philadelphia, they are really not comparable. We use a low percentage rate of depreciation where we have underground plant in Houston.

Q. Now, Mr. Hoag, Mr. Lyndon put in some set up here and adopted that figure as the annual reserve for replacements. 1038

A. My understanding of Mr. Lyndon's set up is that he has approached the whole matter of depreciation from a somewhat different standpoint than we do, in that, his set up, as I understand it, is on an investment basis,—that is, it is dealing with money, and money only. Our set up for depreciation has been determined, first, by the forty years of experience that the Bell Telephone Companies have had in the operating and maintaining of telephone properties. I, personally, have had an opportunity to check the rates of reserve as established by the American Telephone & Telegraph Company. Those rates of reserve are the basis for the rates which we use. I have known of toll lines, of cable plant, of telephone central office equipment which has been installed and which has later been replaced, and have had the opportunity to check out in detail the different rates of reserve as applied to different kinds of plant; all of our experience in Texas, all of our experience in the Southwestern Bell System, covering five States, and as I stated, the experience of the Bell

Telephone Companies throughout the United States, and all of that

forms the basis for the rate of reserve as established.

Q. Now, you have made a very careful study of this proposition in arriving at what, in your opinion, constitutes a proper annual reserve for the replacements?

A. Yes, sir. Q. Has anything that Mr. Kelsey or Mr. Lyndon had to say 1039 with reference to this matter caused you to change your opinion as to what is the proper amount?

A. No, sir, they have not dealt with the matter in such a way.they have not developed anything which would cause me to change

my opinion.

Well now, I wish you would explain to us just how you consider

"junk" value with reference to depreciation.

A. Any part of the plant having a "junk" value means, necessarily, that a lower rate of reserve, a lower percentage rate of reserve is applied than to a part of the plant having an equal length of life, but no "junk" value; in other words, the "junk" value tends to reduce the per cent rate of reserve.

Q. Well now, you did take into consideration "junk" value in arriving at the proper amount of the annual reserve for each of the

items of the property?

A. The "junk" value—the salvage value must necessarily be considered in arriving at the proper per cent rate.

Q. I believe you arrived at the figure of 6.33?

A. Yes, sir.

Q. Now, does that 6.33% apply to the "junk" value or to 100% of the property?

A. You mean does it apply to the depreciable value or the first cost?

Q. Yes, sir.

A. It applies to the first cost of the physical property. 1040

Q. Now then, if you had applied it to the depreciable property, would it have been 6.33%?

A. No, sir, it would have been increased to possibly 8½%. haven't figured that out and that's approximate.

Q. But you made due allowance for this "junk" value in arriving at this percentage?

Q. All of which was considered in connection with your direct evidence in this case,—the evidence put in on direct testimony?

A. Yes, sir.

1041 Redirect examination.

(Questions by Mr. J. D. Frank:)

Q. Mr. Hoag, have you estimated the amount which should be set aside each year as an annual reserve for replacements?

A. Yes, sir.

Q. What is that expressed in percentages of the reproduction cost new of the property and in dollars and cents?

A. That is 6.334. Q. That is what?

A. Of the reproduction cost of the property, and that in dollars and cents is \$359,999.86.

Q. Which has to be set aside each year to take care of replacements?

A. Yes, sir.

Q. Now, what is your understanding or explanation as to the difference between the depreciation and reserve for depreciation or

reserve for replacements;

A. The difference between depreciation and reserve for replacements is depreciation is a physical condition of the property due to rust and rot, wear and tear and other causes which makes for a lessening in value of the property. The reserve for replacements is the fund set aside to care for deterioration which is certain as well as the many other things, such as inadequacy, obsolescence, fire and storm and other casualties.

Q. Have you an exhibit with reference to this matter?

A. Yes, sir.

Mr. J. D. Frank: We offer that exhibit in evidence as plaintiff's exhibit No. 24.

1042 (Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 24, as requested.)

Q. What does your Reserve for Replacements cover?

A. It covers, first, Physical Replacements, that is, replacements due to physical causes. That can be seen and can be measured with some degree of accuracy and certainty. That includes rot, rust, wear and tear. The second is a functional—that is, something that can be seen and anticipated with less certainty than physical, but with more certainty than contingencies, and includes obsolescence, inadequacy and public requirements. The third is contingencies and covers fires, floods, storms, sleet, lightening, accidents and other casualties.

Q. I think some of the matters mentioned by you speak for themselves, such as wear, tear, rust and rot, and so forth. Take up some

of the other items and explain what you mean.

A. Obsolenscence. Apparatus giving superior service might be, and is, designed from time to time, resulting in existing apparatus and equipment becomeing obsolete. Inadequate on account of the growth of the community. Public requirements are things such as street widening, highway requirements-highway improvements which require the repla-ement of poles, conduit lines and so forth. The casualties, fires, floods, storms, are such things as the 1915 storm in Houston, at which time something in excess of fifty thousand dollars was charged to reserve for replacements.

Q. Now, that you have explained what this covers, take up the exhibit which you have just introduced in evidence and explain

that to us.

A. On page 1, the first item is land. Land doesn't depreciate. The

second item is buildings on which we have figured a depreciation of 3 per cent per annum. That means a life of 1043 331/2 years. I have an exhibit showing the average life of telephone buildings in Texas.

Mr. J. D. Frank: We offer that in evidence as Plaintiff's Exhibit No. 25.

(Thereupon said exhibit was received in evidence and marked Plaintiff's Exhibit No. 25, as requested.)

Q. Now then, just referring to this last exhibit briefly, what does that show with reference to the average life of Telephone Central Office Buildings in the State of Texas.

A. That shows an average life of 11 2/7 years. Q. How have you set that up on that exhibit?

A. I have shown the location of the buildings, the type, the period of ears in service, and the cause of removal.

Q. You have included in that some buildings here in Houston,

have you?

A. Yes, sir, two Houston Buildings.
Q. How many buildings do you show in that exhibit?

A. Seven.

Q. What was the average life of these buildings?

A. 11 2/7 years.

Q. All right, take up some other item on your exhibit other than buildings.

A. The next item is pole plant. Poles have a life of about 12

Q. Before we get to that, Mr. Hoag. According to your actual experience as to those buildings, I believe, the average life was 11 2/7

years. What have you figured as the average life of build-1044 ings in your set up for the amount of reserve for replacements?

A. 33 1/3 years.

Q. You figured that as the average life of buildings?

A. Yes, sir.

Q. Go ahead with your explanation as to the annual rate of

reserve for replacements, in connection with the pole plant.

A. A pole has a life of about 12 years, if permitted to live their life when initially installed, but poles are seldom permitted to live their life. Inadequacy is the biggest factor in connection with pole We have figured 10 per cent depreciation on the replacements. pole plant.

Q. All right, take up some other item and explain it.

A. Bare iron wire constitutes a portion of the aerial plant, which is of a temporary character.

Q. Why do you say that is temporary?

A. Because it is seldom permitted to live ite life when initially installed. Inadequacy has the greatest effect upon the replacements of bare iron wire.

Q. How about the actual physical deterioration of that kind of equipment in Houston, Mr. Hoag, is it rapid, or not?

A. In Houston the deterioration of bare iron wire is very rapid on

account of the damp moist climate.

Q. Causing it to rust and wear out quicker than it ordinarily does

in a dryer climate?

A. Yes, sir. Wire which will last down here three, four, five or six years will last twenty years or thirty years out in some portions of West Texas where it is dryer.

Q. All right, take up another item.

A. Insulated Wire comes in the same class as bare iron 1045 wire, and the greatest cause of removal is inadequacy, and the climate had a considerable effect upon the insulated wire.

Q. That is protected by insulation, is it not?

A. Yes, sir, but that insulation in Houston is subject to a sort of steaming process, in the summer time particularly when the rain fall is considerable, and the life of the insulation is very short, and the life of the wire is very short.

Q. The steaming process you speak of causes that insulation to

rot and wear off?

- A. Rot and decay. Another item is central office equipment. The depreciation has been figured at 10.5 per cent. I have an exhibit on that showing the average life of a very considerable number of central office switchboards in Texas,
- Mr. J. D. Frank: We offer that in evidence of Plaintiff's Exhibit No. 26.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 26, as requested.)

Q. Now, what do you show by this exhibit, Mr. Hoag?

A. On the last page of that exhibit I show the total number of common battery boards, and the total number of magnate boards.

Q. Now, explain the heading at the top of this exhibit, as to what it shows there, what you are trying to do in setting up this exhibit. A. First is the location in which the switchboard was, second is

the type of switchboard, third is the period of service, fourth is the years in service, and fifth is the cause of removal. .1046

Q. Then, what do you show with reference to the total

number of common battery boards on the last page?

A. A total of 18 common battery boards having an average life in service of 6-83/100 years.

Q. Now, that has been the actual experience of the telephone company with reference to all of these boards listed, has it?

A. Yes, sir.

Q. What have you used in setting up the amount of your annual reserve for replacements as the average life of common battery boards?

A. 10 years.

Q. Does this exhibit set up any boards for the City of Houston? A. Yes, sir.

Q. On what page of your exhibit?

A. On page 6 of the exhibit, about the middle of the page.

Q. All right. Mention the boards there, how long they were in service and why they were removed?

A. The first switchboard in Houston was in service three years. It was removed on account of obsolescence

Q. What kind of board was that, Mr. Hoag?

A. Magneto switchboard.

Q. Was that one of those boards for telephone systems where you had to turn a crank on the telephone in order to get in connection with the operator?

A. Yes, sir.

Q. That style of board only lasted three years?

A. That particular board only lasted three years. There were other megneto boards installed and replaced. The second magneto board lasted nine years. The third magneto board lasted seven years.

Q. I notice you have there as the cause for the removal of that board "inadequacy." Can you explain just what that was in con-

nection with that particular board?

A. The growth was such that the switchboard would not care for the business, and that board was replaced with a magneto multiple board, that is, a board which would handle more business. That only lasted three years, at the end of which time the public requirements in Houston were such that a common battery switchboard had to be installed.

Q. What is a common battery switchboard?

A. A common battery switchboard is the type of board which we have in Houston, it only being necessary to remove the receiver from the hook to signal the operator.

Q. Public requirements had become such that you had to remove

the old style board and put in the new style board?

A. Yes, sir.
Q. Let me ask you at this point about this proposition: All of this property that is removed has a salvage value, had it not?

A. Some of it has, that portion that is removed before it has lived its useful life, in general has a salvage value, but that portion which is removed on account of being worn out generally has no salvage

Q. How do you handle that in connection with your reserve for depreciation, that is, with reference to the salvage value of the prop-

erty which is removed?

A. The current value—the current cost of the property at the time of removal is taken out of the capital account,

and the cost of that property is debited against the reserve for replacements. Then that property, if it is fit to be used, or if it has any junk value, goes into the supply account. The supply account is debited with the value of that property as material, exclusive of the cost of installing it and removing it, and the difference between the value of that property as material, and the original cost plus the cost of removal, is debited against the reserve for depreciation, or replacements.

Q. Also, the difference between the original cost of the property and what you realize from the sale of the property as junk, when-ever you junk it, is t-eated in what manner?

Q. That is charged to your reserve for depreciation?

Q. All right.

A. A good example of that might be the following: Suppose a switchboard is installed at a cost of \$1,000 and it stays in service for say ten or twelve years. It is then removed at a labor cost to remove it of \$50. It hasn't much value, practically worn out at the end of that twelve years and it is sold as junk for \$100. Then the net salvage is the selling, or junk price minus the cost of removal; that is, it will be \$100 less \$50, the \$50 being the cost of removal. Therefore the part of the investment which depreciates is \$1,000 minus \$50, the \$50 being the realized net salvage, of \$959. such a case \$950 would be charged against the reserve for replace-

Q. That is a pretty clear example. Take up some other item on your exhibit No. 24. I notice you have there right of way. Explain that to us, Mr. Hoag.

A. Right of way depreciates only at that time it is abandoned.

Q. Has right of way any salvage value?

A. It has no salvage value, and this 4 per cent figure used here means that about 4 per cent of the total right of way is abandoned

Q. Are you constantly abandoning right of way?

A. Yes, sir. An example of that in the City of Houston would be in the case of the permit fee which we pay to the city for each pole set. We have been paying that fee since 1898, and that cost is charged against the right of way account as are also such other right of way expenses as are incurred in connection with the cost of setting poles. Each year in Houston we set from 700 to 1,000 new poles and displace a very considerable number running up to 600 of 700, and as those poles are displaced the right of way account has to be credited with the right of way costs originally in-

Q. And you have right of way costs in connection with the setting of each pole?

A. Yes, sir.

1050

Q. All right. Take up one more item on that page and explain it to us. Take the last one, stable and garage equipment. What is the percentage set aside for your reserve for depreciation on that,your reserve for replacements? A. 20 per cent.

That is based on an estimated five year life for

stable and garage equipment.

Q. That consists mostly of automobiles?

A. Yes, sir. Q. Ford cars?

A. Yes, sir. Q. Those cars are subjected to constant use, are they? A. Yes, sir.

Q. And severs uses?

A. Yes, sir.

Q. I believe you have heretofore testified that some of them were trucks that hauled the heavy timbers, the heavy poles?

A. Yes, sir. Q. All right. Take up page 2 of your Exhibit No. 24 and ex-

plain that to us.

A. Page 2 shows the Weighted Annual Rate of Reserve for Replacements. The first column represents the annual rate or reserve for each class of plant; the second column represents the per cent of total reproduction cost of each class of plant, and the third column represents the weighted annual rate of reserve.

Q. Take up your first item there.

- A. Land doesn't depreciate and we do not set aside any deprecia-
- Q. The total—the per cent of the total reproduction cost of that particular part of the plant, I believe, is 4.58 per cent?

A. Yes, sir. Q. Take up your second item.

- A. Buildings. We figure 3 per cent depreciation. That represents 10.15 per cent of the total reproduction cost of the plant as a whole, and therefore the weighted annual rate of reserve is .305 for builsings. That is arrived at in like manner as the weighted average obtaining in the previous study we had.
- Mr. Howard: What was that in connection with? I have forgotten now. 1051

Q. Per cent condition of the plant, was it not?

A. Yes, sir.

Q. Take up one or two other items on that,

A. The pole plant—the annual rate of reserve is 10 per cent. The total-per cent of the total reproduction cost of the pole plant to the cost of the plant as a whole is 7.86 per cent, and the weighted annual rate of reserve is .786 per cent. Those items considered as a whole produce an annual rate of reserve of 6.334.

Q. Now, that is the way you arrive at the annual rate of reserve

as set out on page 2 there?

A. Yes, sir. Q. Now Mr. Hoag, is that figure based on actual experience in the telephone business?

A. Yes, sir, that is based on many years of actual experience. Q. And that is based on actual experience in the telephone busi-

ness in the State of Texas?

A. Yes, sir.

Q. Do you think that that figure is a conservative one?

A. Yes, sir. Q. Is that based entirely on your experience in the telephone business Mr. Hoag?

A. It is based on the experience of the telephone company.

Q. Are you familiar with the allowances that are usually made on this-what the amount of depreciation reserve usually runs on telephone properties of this magnitude?

A. Yes, sir.

Q. Take up page 3 of your exhibit and explain that, Mr. Hoag. A. Page 3 shows the total reproduction cost of the physical

property as \$5,638,610. It also shows the annual rate of reserve 6.334 per cent, and then shows the amount of annual

reserve, which is \$359,999.86.

Q. Now, Mr. Hoag, you have given us testimony with reference to certain causes which must be taken into consideration in figuring the annual rate of reserve for replacements. Have you prepared an exhibit which sets forth causes other than normal wear and tear and so forth, which tend to limit the life of a telephone plant?

A. Yes, sir.

Mr. J. D. Frank: We offer that exhibit in evidence as plaintiff's Exhibit No. 27.

(Thereupon said exhibit was received in evidence, and marked Plaintiff's Exhibit No. 27, as requested.)

Q. Now, what is shown by that exhibit, Mr. Hoag?

A. Causes other than Normal Wear and Tear, Rust and Rot which tend to limit the life of Telephone Plant.

Q. Will you read the first paragraph of that.

A. "Telephone plant generally is subject to more or less deterioration on account of the wear and tear and rust and rot. In addition a large portion of the plant is replaced before it lives it- life on account of other factors, such as obsolescence, inadequacy, changes in public requirements, accidents, storms, fires and other casualties."

Q. Then you set out there some causes other than normal wear and tear and rust and rot which tend to limit or reduce the life of the

various parts of the plant.

1053 A. Yes, sir.

Q. Take up your pole plant there and explain a few of

those items.

A. The first item under "pole plant" is the extension of underground conduit. That means inadequacy, means that when the poll line becomes inadequate to care for the business that underground conduit is extended and displaces the pole line.

Q. Take item No. 3.
A. Street widening and other highway improvements, such as charges in curb lines, changes in grades and so forth.

Q. All right, take No. 8 and explain that to us.

A. Substituting poles in the alleys for poles in the streets.

Q. Why are those substitutions made?

A. That would be in case of public requirement where we have to remove the poles from the streets and place them in the alleys, where alleys exist.

Q. Do you actually do that in Houston?

A. Only to a limited extent in that there — only a limited number of alleys in Houston.

Q. But it does necessary to do that, and you have actually done that in Houston?

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A. Yes, sir.

Q. Take the last item under pole plant.

A. Replacement of crossarms (which are included in the pole line account) by aerial cable. When the aerial wire plant is replaced by aerial cables, then the wires and also the supporting cross-arms are removed. That in a case of inadequacy.

Q. Take your next item "Aerial Wire" and explain item No. 1

under that heading.

1054 A. The insulating material on wire breaks down more rapidly in a moist climate than in a normal climate.

Q. You testified about that a few minutes ago in connection with the steaming process of the insulating?

A. Yes, sir.

Q. Item No. 3.

A. Insulatied wire is strung through trees, and under these conditions the wear and tear is usually excessive. People will not permit you to trim the trees and the wire wears out rapidly.

Q. Item No. 4.

A. The occasional removal of drop wires on wholesale scale when the plan of distribution is radically changed, as for example, when pole lines on streets are replaced by distribution lines in alleys or on rear property lines. That happens quite often.

Q. The last item under that heading.

A. Wire is run in advance of aerial cable construction and is taken down when aerial cable is placed. Its special function therefore, in such cases, is what might be termed "pioneer" work.

Q. Why do you run those wires in advance? Wouldn't it be more

economical to run your cable?

A. No, sir, the economical thing to do is to provide such facilities as the amount of business seems to warrant, and that usually means in the residence section as the town grows that the first facilities provided are aerial wires strung on poles, which, as the section grows, are replaced with aerial cables.

Q. All right. Take the next section down there "Aerial Cable."

A. Aerial cable often represents an intermediate period in the telephone distributing plant. When only a few circuits are 1055 to be taken care of, open wire or twisted pair wire is used.

When more circuits are required, small size aerial cable is placed, which may later be replaced with larger size, and with still further growth aerial cable is replaced by underground cable.

Q. What is that caused from?
A. That is an example of inadequacy.
Q. That has been your experience here in Houston?

A. Yes, sir.

Q. What is the next item?

A. Item 2, is the factor of municipal requirement such as the extending of fire limits, or public demand also operates to reduce the life of aerial cable, as it is often necessary to replace aerial construction by underground for this reason.

Q. That is, you had aerial cable down in and around the business section of the city, or the town, when the town was small, and then the city established fire limits and you are not permitted to maintain that aerial cable there, but required to place it underground?

A. Yes, sir, and they enlarge the fire limits as the city grows, and

that makes it necessary to remove the aerial construction.

Q. The changes, as result of that, are charged up against your reserve for depreciation?

A. Yes. sir.

Q. Or reserve for replacements.

A. Yes, sir.

Q. Take underground cable, the first item under that.

A. Any defect occur-ing in the sheath, allowing moisture to enter the cable ruins it.

Q. Does that put any of the wires out of commission, or put 1056 all of the wires out of commission when moisture comes in contact with it?

A. Yes, sir, the paper insulation has to be kept absolutely dry,

otherwise the cable is out of commission.

Q. What is your second item?

A. The sheaths are liable to be damaged by electrolytic action. We take special precautions to guard against damage by electrolytic action, but the stree- car company changes the routing of their care, or something of that sort without out knowledge, and it frequently causes damage.

Q. I believe you have heretofore testified that electricity coming in contact with your cable has the same effect on it as if some kind

of acid was poured on it?

A. Yes, sir, corrodes and eats through the sheath at the point where it leaves the cable.

Q. Take some other item.

The construction of sewers and other subsurface work and the regrading of highways frequently necessitates the shifting or abandonment of conduits and the changing of the cables contained thereon. No. 7: Advances in the art making it economical to pull out old large diameter cables and substituting cables containing more wires, but of the same diameter, thereby avoiding expensive subway enlargements. That is an example of obsolescence.

Q. That is, your cable as originally manufactured, only carried so many wires, and now you make the smaller cables which contain

even more wires than the cable which you originally made?

A. Yes, sir.

Q. Has the Southwestern Company developed that im-1057 provements in the art?

A. No, sir, those developments have been brought about by the American Tel. & Tel. Co.

Take up Subsidiary Cable and point out one or two Q. All right.

items under that.

The subsidiaries extend from the main underground A. Item 1. cables to terminal poles of buildings. Their abandonment is frequently brought about by the necessity for abandoning terminal locations which are subject to the causes already mentioned in relation to shortening the life of exchange poles, and by removal of buildings. Item 2. On account of their location, subsidiaries are exposed to mechanical injury in much the same way as aerial cables. and to bur-ing and melting of the sheath when electric light or power wires come into contract with them.

A. The life of house cables is limited by inadequacy and building changes.

Q. Houses are re-arranged, and you have to re-arrange your cables

which enter into the houses?

A. Yes, sir. And I might say that Item No. 2 is an example of a casualty.

Q. Take up the next item, "Underground Conduit" and pick out a

few examples of that.

A. The first item under underground conduit is municipal improvements such as the change in the grade of highways, reconstruction of bridges and grade crossing work.

A. All right, take up another item.

- A. The second item is the construction of sewers and water 1058 mains, requiring the removal of conduit.
- Q. That is, your underground conduit is so constructed they would interfere with construction of these sewers and water mains on the part of the city, and you are required to remove them so as to get rid of that obstruction?

A. Yes, sir.
Q. Does that often occur in a city like Houston?

A. Yes, sir.

Q. All right, the last one at the bottom of that page, No. 5.

A. No. 5, Manholes are subject to inadequacy and in fact have to be rebuilt often.

Q. I believe you gave an example of that when Mr. Howard was questioning you today?

A. Yes, sir, I recited a specific case.

Q. Take your next item there on the next page.
A. "Subsidiary Conduit." The first item, the iron pipes used for subsidiaries are not ordinarily encases in concrete and are therefore more subject to corrosion that would be the case of iron pipes where such are used in main conduit.

Q. Do the climatic conditions in Houston add to that depreciation

of that particular part of the property?

A. Yes, sir, iron pipes rust out very rapidly here, and we have taken the precaution to use galvanized iron pipe, but even that rusts out.

Q. Item No. 5.

A. Subsidiary conduit connecting with pole lines has a relatively In some sections of a city the first construction will be entirely overhead, then as the plant grows, conduits will be

1059 installed and subsidiaries constructed between the conduit and the pole lines. As growth occure, the pole lines adjacent to the conduit will be the first one to become congested and the first to be removed. The conduit will them be extended, the pole lines removed, and the subsidiaries abandoned.

Q. Is that an example of inadequacy, obsolescence, or what?

A. That is an example of inadequacy.

A. No. 6.

A. Building reconstruction frequently causes the abandonment of subsidiaries. Q. You mean in reconstructing your property?

No, sir, the reconstruction of buildings to which the subsidiary conduit leads, not the underground main line conduits.

Q. Take up the itme of Central Office Equipment.

item No. 2 under central office equipment, and explain that,

A. It may become necessary to displace the switchboard due to growth which makes its capacity too small.

Q. Has that actually occurred here in Houston?

A. That has occurred several times here in Houston. example of inadequacy.

Q. I believe you had certain boards here in Houston which have

been removed on that account?

A. Yes, sir.

1060 H. P. TOPPING, a witness for the Plaintiff, was sworn and testified as follows, to-wit:

Direct examination

(Questions by Mr. J. D. Frank:)

My name is H. P. Topping and I live in Kansas City, Missouri. I am not a professional witness. It is sometimes necessary for me to appear in Court, or before Commissions, to explain the methods

that I have pursued in preparing my valuations.

My occupation is that of a Valuation Engineer and I devote my exclusive time to telephone valuations. I am connected with the Topping Valuation Company of Kansas City, Missouri; I own the Company and employ six men and two ladies. We do other kinds of work other than valuing telephone property; we handle public utilities and industrial work. I don't personally handle the industrial work, but that is in charge of another Department. an employee of the Southwestern Telegraph and Telephone Company, nor am I an employee of any of the Bell Companies.

I have been engaged in the general business of valuation work since 1905, with the exception of two years when I was

in the purchasing department of the telephone company. have had experience in the telephone business; I might explain in connection with that,-I began work for the telephone company on September 1st, 1897 at Lawrence, Kansas. My employment was with the Missouri and Kansas Telephone Company. In that day the telephone business was in its infancy. My first work was as a night operator. I slept in the office at night and attended to the calls, and did general work of any character that presented itself during the day time. It was necessary for me to familiarize myself with the switchboard, make repairs to the switchboards, repair worn

and defective parts and during the day time do such work as ground man, lineman, inspector, installer, collector,—general utility work. In fact, the business was very small at that time and there was only one men employed, and that was myself, outside of the manager. I occupied that position about a year and a half and I was then transferred to day work which consisted practically of construction and maintenance, installing telephones, building extensions to the plant, maintaining existing property and taking care of the toll lines. I was in that position for about two years and was then transferred from Lawrence, Kansas to El Reno, Oklahoma by the same company, as manager. The size of the exchange at El Reno was about 300 stations and I was responsible for the entire operation of the plant for traffic matters, and for all commercial matters. It was necessary to lay out the plant, build extensions, or rebuild the property, as the occasion might arise and in connection with that

work it was necessary to see that the material was unloaded when it arrived, hauled to the proper storage yard, supervise the workmen in digging holes, hauling poles, erecting them, stringing wires, stringing cables, installing telephones, in fact, in those days we did practically all our own work. I have installed switchboards. As manager of that exchange I had charge of the toll lines extending from Enid to Chickasha, a distance of approximately 95 miles, and from Yukon to Gary, a distance of approximately 45 miles, making a total of about 135 miles, and I was responsible for

the maintenance and the up-keep of the lines.

I remained in El Reno as manager until the spring of 1905 when I was transferred by the same Company to Kansas City, Missouri, given the title of Special Agent on the staff of the General Manager and assigned to valuation work and engineering. I handled that work for about two years and in 1907 I was transferred from the General Manager's Staff to the Purchasing Agent's Department as Chief Clerk. It was my duty as Chief Clerk to audit the requisitions for supplies, check them up with the engineers' specifications and engineers' estimates, and to see that the supplies were shipped, to see that they were checked and proper receipts returned to the Company. To see that they conformed to the specifications and check the bills and pass them for payment. I was Chief Clerk about two years. In 1909 the Telephone Company resumed valuation work and I was as

signed to that character of work. That work consisted of
making inventories of telephone properties for the purpose of
purchasing them. I did not merely make the inventory and
have some one else appraise the property we made the inventory

and valuation,—a complete appraisal.

Q. That was for the purpose od determining the value of a particular exchange when the company was selling one, and to determine the value of a particular exchange when the company was buying one?

A. Right at this particular time they were buying,—they were

not selling any.

In 1912, about the first of July, the Company began selling exchanges, buying and consolidating them. That was the Missouri

and Kansas Telephone Company and is a branch of the Bell Telephone Company. I was given the title, at that time, of Inventory Engineer, and transferred from the Purchasing Department to the General Manager's Staff. I was also given temporary charge of the purchasing Department for several months. A little later in the same year, the Company was again re-organized and I was transferred from the Staff of the General Manager to the General Plant Superintendent's Department, and given the title of Valuation En-

My duties, as Valuation Engineer, consisted of making appraisals for the purpose of selling, purchasing, consolidating and rate-mak-I had access to the Company's records, all of the engi-

neering data and and all of the available information pertaining to the subject of valuation work. In my position as Valuation Engineer for the Company, I made estimates as to the cost of particular construction work. I might state that between 1912 and 1916 we made two general inventories of all of the properties owned in the States of Missouri and Kansas by the Missouri and Kansas Telephone Company. The last one we started about the last part of 1914 and completed it in December 1916. In making that appraisal, we used between 50 and 100 field men and in the office compiling and assembling, building up the unit costs and valuation we used from 15 to 30 men. I had entire charge of that work. make that valuation, or do that work, took about two years. mained with the Missouri and Kansas Telephone Company, in the capacity of Valuation Engineer until the latter part of 1916, when I resigned and entered into the valuation business. I haven't worked for any particular telephone company since that time.

I have been engaged in General Valuation work. that while I was with the telephone company I valued something like two or three hundred properties, appregating something like a hundred to a hundred and fifty million dollars. And since engaging in business for myself I have made approximately fifty to seventy-five valuations, aggregating something like \$15,000,000.00.

My home is in Kansas City, Missouri. The most of my work is if in the State of Missouri. We do work over several states. We not in the State of Missouri. have a job right now on in New York and one in Michigan. have worked in Nebraska, Iowa, Missouri, Kansas, Texas,

1065 Arkansas and Oklahoma and Illinois. The jobs that we have been doing at that valuation work were all telephone jobs, with one exception—the one in Brooklyn, New York,—is an indus-

Practically all of these appraisals that I have been making of tele-

phone properties have been in connection with rate cases.

I have made an appraisal in the State of Texas, other than that made in this particular case. We made an appraisal, I believe, in 1917 at Nacoma, Texas of the Nacoma Telephone Company. was a property of something like forty or fifty thousand dollars in In 1917 we were retained by the City of Fort Worth to prepare an inventory of the property of the Southwestern Telegraph and Telephone Company in the City of Fort Worth.

1066 Redirect examination.

(Questions by Mr. J. D. Frank:)

Mr. J. D. Frank: We offer this exhibit in evidence as Plaintiff's Exhibit No. 35. The Exhibit is headed "Annual Depreciation Reserve."

(The paper was thereupon received in evidence, marked "Plaintiff's Exhibit No. 35," and is filed herewith.)

Q. First, Mr. Topping why is it necessary to set aside an amount each year to take care of your replacements or your depreciation?

A. You have property that is worn out in the service or becomes

inadequate or obsolete, or-

Q. (Interrupting.) Well, what does it cover?

A. It covers the replacements, the major replacements of the physical property.

Q. Well, why is it necessary to replace the property, what brings

about these replacements?

A. It is brought about, due to rot, rust and decay; to municipal and public requirements; to inadequacy and obsolescence and other causes; storms.

Q. Well now, what have you attempted to do in this Exhibit here?
A. I have attempted to determine the amount of money that

A. I have attempted to determine the amount of money that should be set aside each year to make these replacements of the major items as they occur and keep the property up in good service-able condition.

Q. Well now, take up the various items of property there and

explain your exhibit to us.

1067 A. The first item is land. There has been no allowance made on land. On buildings, I have used the rough 2½% per year, and multiplied that by the reproduction cost new of the buildings, for \$525,374.00, which equals the amount of depreciation reserve as \$13,134.00. On equipment consisting of central office and other equipment of central offices, I have used a rate of 10% or an annual amount of reserve of \$191,200.00.

Q. That is a large item of plant, is it not? A. Yes, sir, that is one of the large items.

Q. All right, sir.

A. Under the next heading "Subscribers' Station Equipment," I have totalled the items and used the rate of 10% of the total reproduction cost new, which gave me an amount of \$53,924.00 as the Reserve for Replacements. Under the "Distributing System" I have used the rate on poles of 10%, which equals \$55,564.00; on aerial cable, 8%, which equals \$68,946.00; on aerial wire, 15%, which equals \$25,269.00, on underground conduit main, 2%, which equals \$16,113.00.

Q. Well, you have figured it out as to all those various items?

A. Yes, sir.

Q. And how much did you get on your total distributing system there as the amount to be set aside?

A. \$211,337.00.

Q. Now, turn to the next page, on the "General Equipment." You have figured that out as to the various items in the same manner?

A. Yes, sir.

Q. And what do you get as the total amount of reserve on that class of property?

A. \$8,779.00, or a total reserve for the entire physical prop-

1068 erty of \$478,374.00.

Q. And that is a weighted average of 7.01%? A. Of the preceding physical property, yes, sir.

Q. Mr. Topping, how did you get these percentages that you have used there, "Per cent rate of reserve," for instance, on the total buildings you take 2.5% on the total equipment you take 10%, on total subscribers' stations you take 10% and so on, how did you get th-se percentages?

A. Those are standard engineering percentages. I took the standard percentages and adjusted them to meet conditions in Houston

as I found them.

Q. Well, now, give us an issustration of some of the things with reference to cuildings, which makes it necessary for you to set aside a Reserve for Replacement?

A. It is necessary to keep the buildings in a high state of repair. The wood works are kept pointed, the screens and awnings are main-

tained, roofs have to be maintained.

Q. Well, now, don't you draw a distinction between the maintenance and depreciation, or the amount that you have to spend on account of depreciation or replacement?

A. There is a distinction. Q. Well, what is that distinction?

A. The short lived parts are items that I would consider proper maintenance, such as cords on switch-board or batteries, or receiver cords on a telephone, or items of short life which are replaced at intervals of less than one year. The replacement of property of

major items would come out of reserve for replacements or

1069 out of this account.

Q. If something happened to your switch board down here, so that you had to repair a certain part of that, would that item of expense be charged up to maintenance or to depreciation?

A. If it happened to the switch-board with amount of any consequences, it would be charged to replacement. If it was some minor thing that didn't require a large expenditure, it would be charged to maintenance.

Q. That is, an ordinary break in the board would be charged to maintenance, but if you had to remove the board and replace part of

it, that would be a replacement?

A. Yes, if you had to remove a section, for example, of the board for some cause, the removal of that section would be chargeable to replacement.

Cross-examination.

(Questions by Mr. Howard:)

Q. I understood you to say that all the short-lived parts are paid out of the maintenance fund. You mean out of operating expense?

A. That would be out of the operating expense.

Q. The Interstate Commerce Commission set up provides for that, I believe?

A. Yes, sir, I think so.

Q. And for repairs generally?

Yes, sir.

Q. Repairs are distinguished from something that goes to replace a part of the plant?

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A. Yes, sir.
Q. Did you make an investigation to learn the average life of this telephone plant here in Houston?

A. To a certain degree I did.

A. About what is the average life? A. I would say between fourteen and fifteen years.

Q. Fifteen years I believe Mr. Hoag gave it. You accept the rate of annual depreciation, for depreciation reserve, as 7.1 per cent?

A. That is the way it happened to figure out.

Q. 7 per cent? A. Yes, sir.

Q. In other words, that would be 105 per cent for the average life—the average life is 15 years-

A. It would be 14 or 15 years, that would be my judgment. Q. So that is equivalent to saying the whole plant is 14 or 15 vears old?

A. No, sir.

Q. What do you mean by that average life?

A. If all of the component parts-all of the physical plant together would average 14 to 15 years.

Q. That is the same thing. I know if you put in a switchboard

vesterday that it is not 15 years old.

A. There would be some parts that would be replaced three or four times during the 15 years, and other parts that would last much longer.

Mr. J. D. Frank: You are confusing age with life.

Q. Do you consider the depreciation reserve has any re-1071 lation at all to the percent condition of the plant?

A. No, sir.

Q. Has that theory ever been advanced, that there is any relation between the two-is there any way of making a comparison between the two?

A. Not that I know of.

Q. No way to make any character of comparison between them? A. The only thing you could compare would be the accrued rot, rust and decay in the physical property at the time of the inspection. Q. You have got a plant with an average life of 15 years, and you set aside 7 per cent a year until you set aside 100 per cent, and that would wipe the plant out?

A. If that is permitted to stand, but that isn't -hat happens; you

are replacing constantly every year.

Q. And that tends to depreciate your depreciation fund, for if you have put in two or three switch-boards in ten of fifteen years, the ones that have gone out of use are not counted in determining the per cent condition of the plant?

A. No, sir, they would be gone.

Q. And at the same time your depreciation fund has been absorbed or reduced to that extent. What I am trying to get at: Suppose you started with a new plant, and parts of it are replaced, that of course comes out of your depreciation reserve?

A. Yes, sir.

Q. And tentd to reduce it?

A. Yes, sir.

Q. Then you start on with that replaced part and give that 1072 a new life, and start it on from that date?

A. Yes, sir.

Q. Then, when you find the plant is practically worn out, based on your 7 per cent reserve for depreciation, as a whole it has practically lived its life, because at 7 per cent that would bring it of the end of its life, and then you find only a 7 per cent depreciation in the per cent condition of the plant, that does not suggest anything to your mind?

A. That isn't what happens—not what happens in this case. parts are continually replaced and renewed. New Subscribers are added and worn parts are replaced. The plant that is inadequate

or obsolescent is replaced.

Q. That is what I am getting at. When you find that you have only got-got a plant fifteen years old, although you have been setting aside 7 per cent all these years-

Mr. D. A. Frank: Nobody has said the plant is 15 years old. Mr. Howard: I understood the average life of the plant was 15

Mr. D. A. Frank: You are confusing the life with the age, and they are two entirely different propositions, Mr. Howard.

Mr. Howard: I am speaking about the average age of this plant. Mr. D. A. Frank: You haven't asked that question yet.

Q. By life I mean age. What is the average age of this plant? A. I don't know.

Q. Have you any way of determining? 1073 A. There is no way I know of to determine. Q. It can be easily determined, can't it?

A. I don't know how you would go about it to do it, except by a physical inspection.

Q. All you would have to do would be to get the date of the items

put in at one time, and those put in at another, and you can get

the age of the plant in that manner.

A. That could be obtained if it was a property constituting a few items, but a property constituting a multitude of items like a telephone plant, where changes are constantly occur-ing, property is being constantly changed, added to and rebuilt and replaced it would be a difficult matter.

Q. But this is a difficult thing to run, a telephone plant?
A. The only way I know you could do it would be to get it on the basis of a physical inspection, and that is what I have done in this case.

Q. Assuming the age of this plant if five years. That would be 35 per cent set aside for depreciation reserve, and you examine it and find it in 92 per cent condition, only 8 per cent depreciated-

A. That is an entirely different proposition. What I am determining when I determine the per cent condition is the facts as I

find them when I make the inspection.

A. There are some things here that are elementary, but we have to go over them two or three times, I understand per cent condition means per cent condition, it don't mean anything else.

have got that. That is the trouble; you assume we have got a complicated thing here, and it requires a great many experts, but the fact is a great many things arise that the ordinary man can grasp.

Mr. D. A. Frank: You have confused age with life.

Mr. Howard: We can assume things once in a while, and that is what we are doing now. We are assuming that the age of this plant, as distinguished from its life, is five years, which would mean setting aside 35 per cent for depreciation, accrued depreciation.

Mr. D. A. Frank: There are two false things about your assump-One is, have you got any evidence the age is five years, and

the other is you have set aside 7 per cent for depreciation.

Mr. Howard: It may be my assumption is not correct, but I am assuming it for the purpose of illustration. That being done, we will now go on. We will assume that the age of the plant is five years, and you have fixed your depreciation per cent at 7 per cent, your annual depreciation.

A. Yes, sir.

Q. And 5 times 7 would be 35. Then at the end of five years you would have set aside 35 per cent. But you go out and examine the plant and you find that it is in 92 per cent condition. We have agreed what per cent condition means; that is, it is only worn out to the extent of 8 per cent, and that leaves a difference of 27 per cent between what has been set aside for depreciation and the actual per cent condition. When you find that sort of condition existing, would that suggest anything to you?

1075 A. They are entirely two different, separate propositions.

Q. Don't that suggest to you that when your depreciation reserve is out of proportion to your per cent condition, that either

of you set aside too much, or that there is some other element other than the per cent condition that you have got to provide for?

A. Maybe I can explain that-

Q. (Interrupting.) No; don't that suggest anything to you, Mr. Topping?

A. There is no comparison there at all; two entirely different things. For example, let me explain it: You have assumed that

the average life of the plant is five years-

Q. (Interrupting.) No, sir; Mr. Frank said age. I asked about the age of the plant, if it had been in existence for five years and no parts replaced-

Mr. D. A. Frank: Impossible on the face of it.

Q. Maybe so, but we will assume it.

A. The average age is five years. If I understand you, the

average age is five years-

Q. (Interrupting.) No, sir, the age. Not the average is no the "average." Come down to fundamentals. There is no out the "average." Come down to fr average about it. The age is five years.

A. The annual rate of reserve is 7 per cent. That makes 35 per

cent, and included in that 35 per cent are such items as-Q. (Interrupting.) Inadequacy and obsolenscence?

A. Yes, sir, and all those things

Q. (Interrupting.) That is what I was leading you to. There is a disparity between your depreciation reserve and

the actual physical condition, per cent condition, and there are other things to be taken care of, inadequacy and obsolenscence. All right now. Then when you come to depreciate your plant, why do you apply only the per cent condition and do not apply this element of inadequacy and obsolenscence?

A. Because they have not happened.

Q. They are going to happen, because you set side this reservethat is all.

Redirect examination.

(Questions by Mr. J. D. Frank.)

Q. He said that you set aside 35 per cent for depreciation, and that the plant is five years old, and you find it is 92 per cent con-Now then, during that five years the plant may have been dition. replaced two or three times, may it not?

A. It may have been.

Q. May have been wiped out by fire or storm, or something of the king, and notwithstanding the fact that you have only 35 per cent in your reserve for depreciation?

A. Yes, sir.

Q. There is absolutely no relation between those two things at all?

A. There is no relation between per cent condition and annual

reserve for replacements.

Q. Let me ask you: Would there be any difference in the per cent condition of your property even though you haven't set aside anything for reserve for depreciation?

1077 A. No, sir.

Q. If you had been operating this plant here since 1888 down to the present time, and had not set aside one cent as reserve for depreciation, would that in any manner affect the present condition of the property?

A. It wouldn't affect the per cent condition at all.